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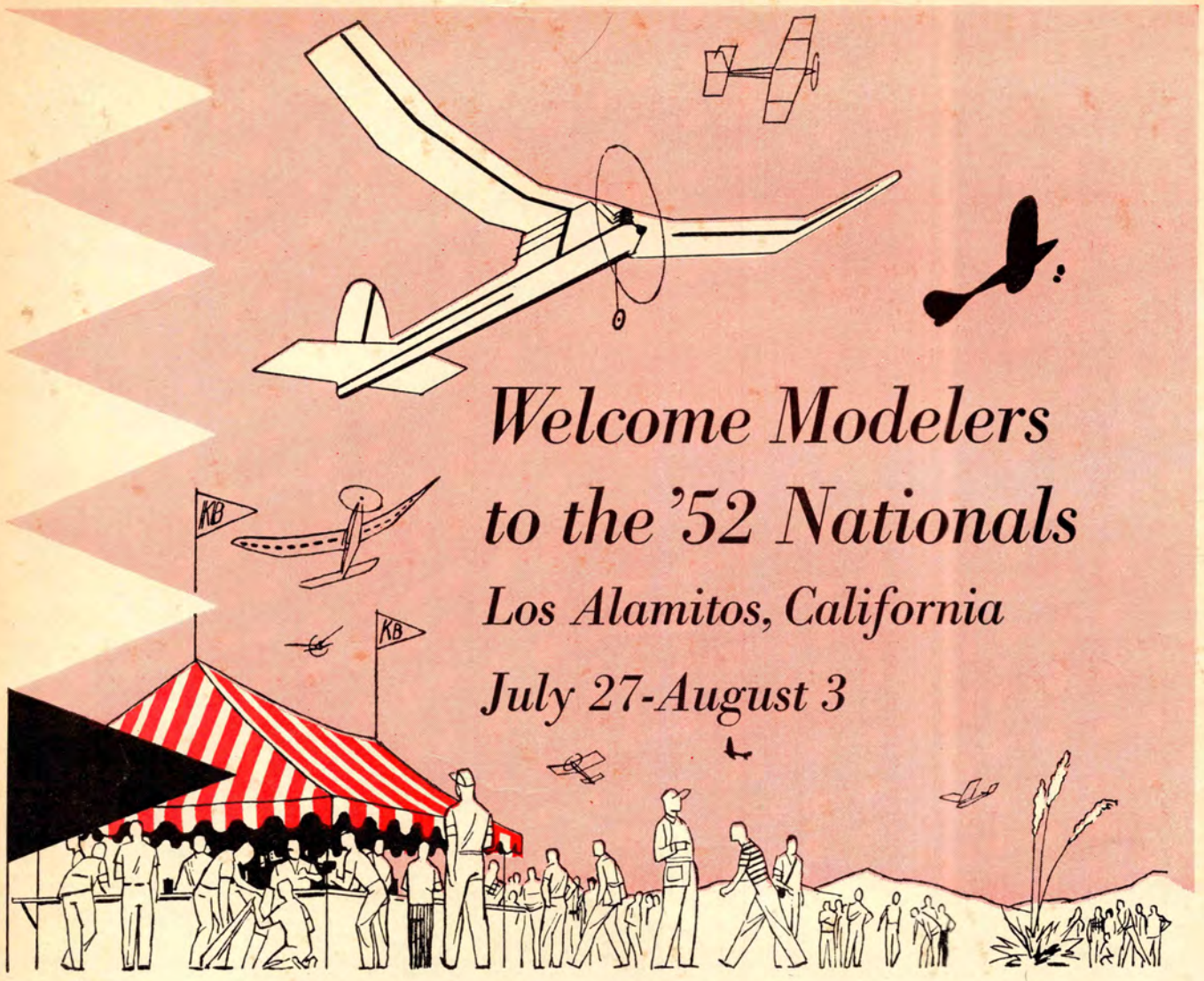
See Page 44



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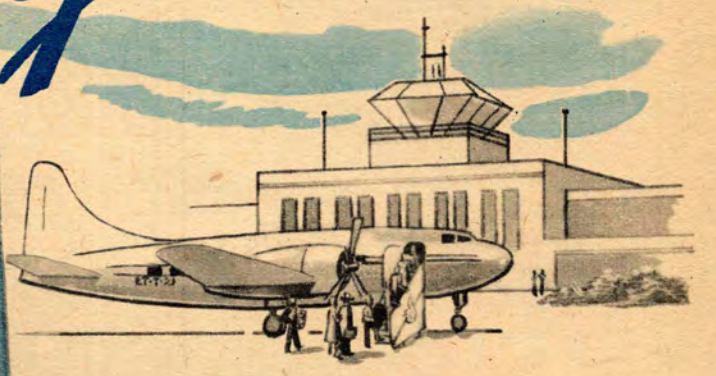

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August 1952 Vol. 38, No. 5

Cover: Chance Vought F7U-3 Cutlass—A. Owles

THE LEADING MAGAZINE OF AIR PROGRESS AND AEROMODELING

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FROM THE READER

All communications to the editorial offices should be addressed to Air Trails, 304 E. 45th St., New York 17, N.Y.

Half-A Navy Carrier Event WILL be Held! . . . I noticed in the very excellent program put out by the Exchange Club relative to the 1952 Model Airplane Championships that no distinction is made as to "class" in the Navy Carrier Event.

It was decided that this year, two events would be held: one for the ½-A class and another for the combined ABCD classes. This was done in an effort to insure more participants, and the word is out in some circles to that effect.

Since the program does not distinguish between the two classes of the event, I wonder if you would make an appropriate note in your next issue to that effect! Unless the word gets out, some participants might get the impression that there will be no ½-A Navy Carrier Event.

LCDR. Howard B. Eddy, Office of Information, Dept. of the Navy, Washington, D. C.

Now on Second 13 . . . Your coverage of the new 27.255 mc spot is very fine. Keep up the good work so Air Trails can be my favorite model magazine for another 13 years. And a lot longer than that, I hope.

Bob Kesler, Quincy, Ill.

Cockpit Detail Included . . . I want to congratulate you on your fine detailed drawing of the Mustang in a recent "Air Progress." You couldn't have picked a more appropriate model for your series of World War II planes, it being the best fighter we had. I was also very much pleased to find the cockpit detail drawing included.

Robert C. Mentley, Buffalo, N. Y.

More from Jim Walker . . . Many thanks for your kind mention of my suggestions regarding programing of events at the Nationals.

I was afraid I did not make myself clear enough to forestall any observations that my plan might require more personnel. As a matter of fact, the programing of all events every day could result in smaller requirements for judges, watches, etc. May I suggest that you work towards determining this phase for your own satisfaction by discussion with others and it will soon become evident to you that a considerable saving in personnel and equipment can be accomplished. After all, 2 x 5 equals 10 as 10 x 1. Two men working for five days can accomplish the job better than ten men working one day. Coupled with the many other advantages I mentioned are the small irritations that crop up each day due to untrained personnel and untrained contestants.

Every year I have witnessed considerable griping because the event would be finished before the contestants who were standing in line would all get a chance to fly. This is the most ridiculous thing I can imagine since I personally would feel very put out if I stood in line all day and never got a chance to make my flight and see someone with a much inferior plane beat me out of a beautiful trophy. I feel sure you know what I mean since there have been many scenes that would not materialize if each contestant had his choice of flying time.

Jim Walker, American Junior Aircraft Co., Portland, Ore.

New Address for U.L.A.A. . . . I wrote to the Ultra Light Aircraft Association in England but as yet have received no reply. Was the address you gave correct?

Don Howzer, Elmhurst, N. Y.

• At the time, yes. We have since been advised of a change of address. All correspondence should now be sent to: U.L.L.A., c/o Royal Aero Club Aviation Centre, Londonderry House, 19 Park Lane, London, W. 1, England. The delay in your case has probably been due to forwarding procedure.

Helicopter Manufacturers . . . Could you tell me what are the companies who make helicopters for private use? Also price and number of passengers and load they will haul?

Pvt. Lloyd A. Herman, Camp Atterbury, Ind.

• The following manufacturers build helicopters for civilian use: Bell Aircraft Corporation, Buffalo, N. Y. Hiller Heliopters, Palo Alto, Calif. Seibel Helicopter Company, Wichita, Kans. Sikorsky Aircraft, Bridgeport, Conn.

Most of these helicopters are two to four places and cost between $25,000 to $70,000.

Sole 3-Engine Plane? . . . I think you made a mistake. You stated that the C-125 Raider is the only 3-engine aircraft in the good ole U.S.A., and on the opposite page down in the corner was another three-engined plane, the jet-powered XB-51.

Bill Wynn, Hobbs, New Mexico

• We meant three-engined propeller-driven planes when referring to the C-125 Raider. You are correct, the Martin XB-51 is also a three-engined plane, powered by jet engines.

Benny Howard's Ike . . . I would like to know the color, markings, and numbers used on Benny Howard's "Ike".

Don Mehlburger, Little Rock, Ark.

• The color of Benny Howard's "Ike" was all white.

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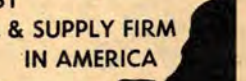

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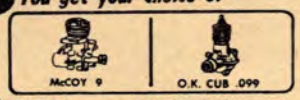

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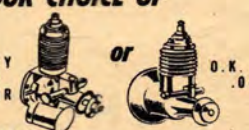

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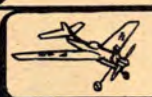
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"AT" FORUM

Question or comment? Let our Experts Advisory Board answer!

First Powered Plane . . . I would like to know who designed the engine which attached to a glider made possible the first controlled and sustained flights in a power-driven airplane.

Alfred DeLutis, Attleboro, Mass.

● First airplane to make a successful controlled and sustained flight was the Wright brothers machine, powered by an engine built by them and their mechanic, Charles Taylor. The engine had a 4-inch bore and a 4-inch stroke, developed 12 hp and weighed close to 200 lbs.

Vapor Trails . . . Every now and then an airplane passes over Covington that leaves a long vapor trail. Almost everybody thinks they are jet planes, but I watched one through binoculars and it resembled a B-29 or B-50. Sometimes B-36's pass over, but they leave only short vapor trails a few hundred feet behind the plane. Are they jets or not?

Richard Gaines, Covington, La.

● Vapor trails are not necessarily created by a jet. Piston-engine-powered airplanes leave them also when flying at high altitude or under weather conditions when moisture content is just right for condensation. They are also known as "condensation trails."

To Remove Covering . . . Could you suggest any possible way of removing torn Silkspan or paper from wing or body surfaces? Is there any shorter way than sanding the entire surface?

Bob Jones, Victoria, B.C., Can.

● To remove covering material of any kind is a tedious job which will require a lot of time. There are various ways of doing this. The easiest and quickest way is to cut the paper loose around the outline and remove only that covering which lies between the leading and trailing edges, then recover the entire surface. Dope thinner and/or acetone can be used to loosen any paper which adheres to the wood for a completely new job.

Acetone is the best, and can be purchased at any drug store. Acetone tends to dissolve the cement so it is best to go over the entire framework and apply new cement for a really strong and complete job.

To Make Rubber Motor . . . For a long time I have been interested in rubber powered contest ships, but have not been able to get information on the subject. Could you please tell me how the rubber motors are put into these ships? I once read an article that stated that rubber motors are braided, but in your magazine plans, and in kits too, no information is given regarding this. Are such ships' motors braided, or do they just string in so many strands of rubber? Also, what is the advantage, if any, of built-up wing ribs over sheet ribs with lightening holes cut in them?

Jerry Herbein

● The popular conception of braiding for rubber motors is a little misleading since there is actually no braiding done; there is instead a braided look to the motor after the following is accomplished. The motor is made up of half the strands you intend to use and twice the length, *i.e.*, if you use 20 strands of 3/16", 44 inches long, a 10-strand motor 88 inches long is made up. The motor is washed thoroughly in water and allowed to dry under natural conditions, then lubbed. A prewind of 80 to 150 turns is then put in the motor in the direction you usually wind, then the motor is doubled or divided in two. When the two ends are joined together the rubber will entwine, giving it a braided look. This is called a "White" rope tensioner, after the English fellow who dreamed up this very satisfactory method of tensioning rubber.

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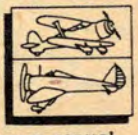

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R/C

Around the modelplane radio-control circuit . . . comment and reports by a leading authority

■ We have been appalled at the "test meters" (or total lack of them!) that some of the R/C flyers try to get along with. As might be expected, good meters cost good money, but by judicious shopping, it is possible to locate meters that are accurate and will do the job we need.

One example of such a meter is shown here. It is sold as "manufacturer's surplus," that is, it is a discontinued line. The meter was intended for use as a three-range voltmeter, reading 2.5, 25 and 250 V. Since the meter movement is 1 ma., it can be adapted as a very useful and compact multi-purpose R/C test unit.

The one milliamp. range is a bit low for checking receiver plate current, so a shunt is used to raise the range to 2.5 ma. Two phone cord tips are inserted in the "Common" and 2.5 V. jacks on the front of the meter, and leads run from them to whatever sort of plug you use on receiver for plate current test.

Also across the two tips are soldered a 2,000 and a 10,000 ohm resistor of the smallest physical size you can get. These may be cheap carbon resistors, and if you want to have real accuracy, the meter may be checked against one you know is correct, before they are soldered in place. Even if you don't do this, however, the meter will serve its purpose just as well, for when checking receiver plate current, you are interested mainly in comparative, not absolute readings. Be sure to plug into the 2.5 V. jacks; no harm will be done if you use any of the others, but the readings will be way off. The picture shows all the test leads in place; naturally, not all are used at once.

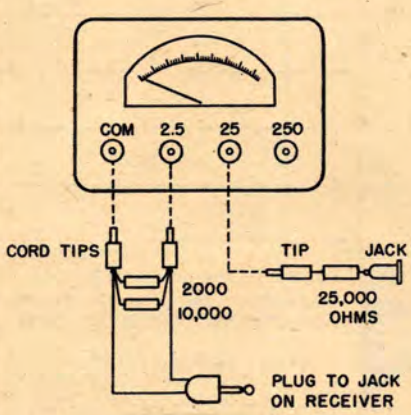
Another adapter of the same sort, and also used in the 2.5 V. jacks, may be made to check the plate current of your transmitter. Such a test is especially important when tuning up crystal transmitters, which tune lots more sharply than the old self-excited jobs we have used so widely in the past. This one should have about 55 ohms, which will give a full-scale reading of around 50 ma., just right for most transmitters.

The three ranges of the meter as it comes* will cover many of the batteries now in use, but if you want to get a better check of the popular 45 V. batteries than can be had on the 250 V. scale, another adapter may be made up as shown. This consists of a cord tip, a tip jack and a 25,000 ohm resistor, all connected in series. It should be inserted in the *25 V.* jack, and will double this, to give you a full-scale reading of 50 V. In this case, of course, the "Common" jack is the other connection to the battery. A pair of short test leads will be a help in checking your batteries.

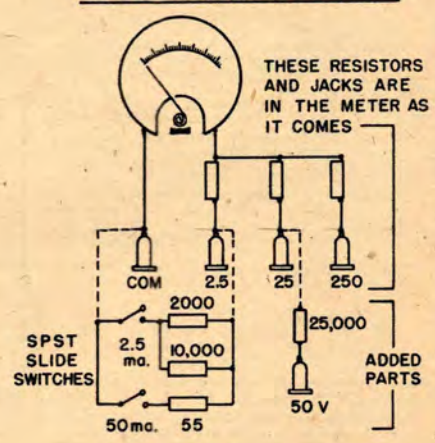
Ordinary carbon resistors, such as we used for this adapter, are made in 20% tolerance, which means that they can be 20% different than they are marked. As we have emphasized, though, most of the readings the average R/C'er needs are comparative only. If you want more accuracy and are on good terms with your radio supplier, ask him to let you check the resistors and meter against his, and try various (*Continued on page* 70)

*Meter is Supreme Minimeter Model 404, currently being sold by The Radio Shack Corp., 167 Washington St., Boston 8, Mass. Also by Lectronic Research Labs, 715 Arch St., Phila. 6, Pa. Price is about $4.00.

SIMPLE EXTERNAL SET-UP FOR THE R/C NOVICE



PERMANENT BUILT-IN ADDITIONAL RANGES FOR THE R/C EXPERT



You can make inexpensive R/C test meter by conversion job on surplus units. See column.

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air notes | AVIATION TODAY AND TOMORROW

F2H-3 BANSHEE, shown in photo above, is the latest version of McDonnell Aircraft's long line of very successful twin-jet fighters. The "three" is an all-weather version with vastly improved radar, longer range and increased armament. Judging by the openings in the lower part of the new Banshee's nose, these guns may be cannon. . . . BOEING lightweight turbine engine manufactured on production basis. Has been experimentally installed and successfully run in heavy duty truck, Navy personnel boat and Kaman helicopter.

★ ★ ★

PARTS for Republic F-84 Thunderjets to be manufactured in Italy by Finmeccanica. . . . NATIONAL AIR RACES postponed until 1953 . . . WING SKIN for late model jet bomber is as thick as destroyer hull and is tapered down with accuracy of 2000th of an inch. When finished, wing weighs 18 tons. . . . FORD MOTOR CO. will build the Pratt & WHITNEY J-57 Turbo-Wasp jet engine which will power the Boeing B-52 and Convair B-60. . . . HAWKER P.1067, renamed "Hunter," has been ordered into production. The single engine jet fighter is reputed to be faster than the F-86, claimed speed "over 670 mph." . . . BRITISH Meteor 8 jet fighters in Korea.

★ ★ ★

CHASE AIRCRAFT CO. moving from West Trenton, N. J., to Willow Grove, Mich. . . . ALL REPUBLIC F-84s destined for North Atlantic Treaty Organization are ferried to Europe by air. . . . SIX JAPANESE pilots given flight training by CAA. All six are veteran pilots with more than 4000 flying hours. Course is refresher to prepare for reopening of active flying in Japan. . . . WINGSPAN of the Convair YB-60, swept wing, eight-jet version of B-36, is 206 ft. compared with 230 ft. of B-36. This is due to sweep of B-60 wing which reduces span from tip to tip. Length is 171 ft. . . . FORTY-EIGHT F-84 Thunderjets were recently delivered to French Air Force in French Zone of Germany under MDAP; six F-84s and tons of aviation equipment, to Italy.

★ ★ ★

BOOKS RECEIVED: "U.S. Fighting Planes 1952," by Lt. Com. Dale W. Cox, Jr., USN; Arco Publishing Co. 480 Lexington Ave., New York 17, N. Y.; $2.00. A pictorial album of the newest U.S. fighting planes. "Model Jets and Rockets for Boys" by Raymond F. Yates; Harper & Bros., 49 East 33rd St., New York, N. Y.; $2.50. Details on small-scale jet engines and rockets.

"Basic Aeronautics," by Merrill E. Tower, Aero Publishers, 2162 Sunset Blvd., Los Angeles 26, Calif. This is one of the best books of its type for the layman. Written especially for high school and junior college classes, it is easily understandable to anyone desiring basic knowledge of such subjects as how an airplane functions, why it flies. Other subjects covered are weather, navigation, CAA rules and regulations, air transportation and international aviation. More than 200 photographs and drawings, plus definitions of aeronautical terms, all helping to make it a worthwhile acquisition for the aviation bookshelf. Price is $3.70.

★ ★ ★

DOMESTIC service airlines flew in 1951, 294,436,000 passenger miles, carried 1,493,000 passengers, according to Air Transport Association. . . . NEW YORK-LONDON tourist class flights operated by British Overseas Airways have been named the "Mayflower Service."

At the time of this writing USAF has 14 accredited jet aces; latest to attain distinction are: Capt. Robert J. Love of San Bernardino, Calif., Major William H. Wescott, Captain Robert T. Latshaw, Jr. of Amarillo, Tex., and Major Donald E. Adams.

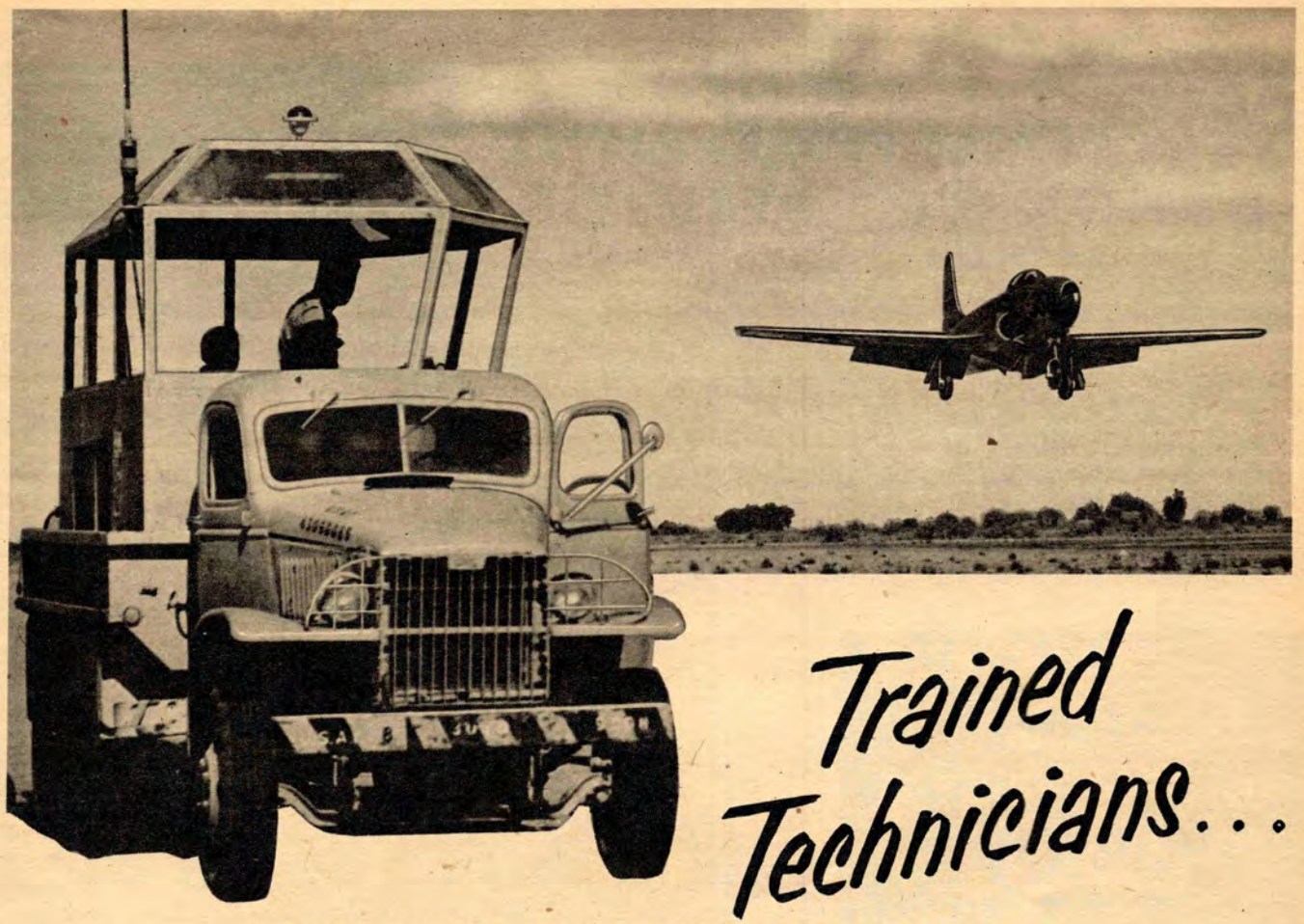
★ ★ ★

BOXED BRAIN, a barometric device which automatically opens the parachute and releases pilot or air crewman from ejector seat, in use by the RAF. Device, manufactured by Irving Chute Co., a U.S. concern, is calibrated to operate at 13,000 ft.

If bailout is made below 13,000, the box automatically delays opening for a few seconds in order to clear aircraft.

★ ★ ★

FIRST AIR RESCUE operation by Navy's new patrol bomber the Martin P5M Marlin was accomplished when the 32-ton flying boat picked up from the sea Marine Col. Marion Carl, who parachuted from his AF-2 Grumman. . . . EXTERNAL fuel tanks, added equipment on Boeing B-47-B six-jet bomber, considerably extend its effective range. . . . SEVENTY THOUSAND more plane spotters are needed in New York State. . . . NOISE is one of the stumbling blocks holding back commercial jet liner transportation. Jet transports are twenty times as noisy as their piston-engine counterparts, according to Dr. Leo Baranek of M.I.T.



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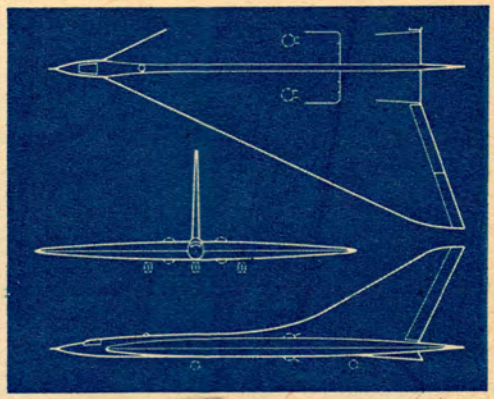
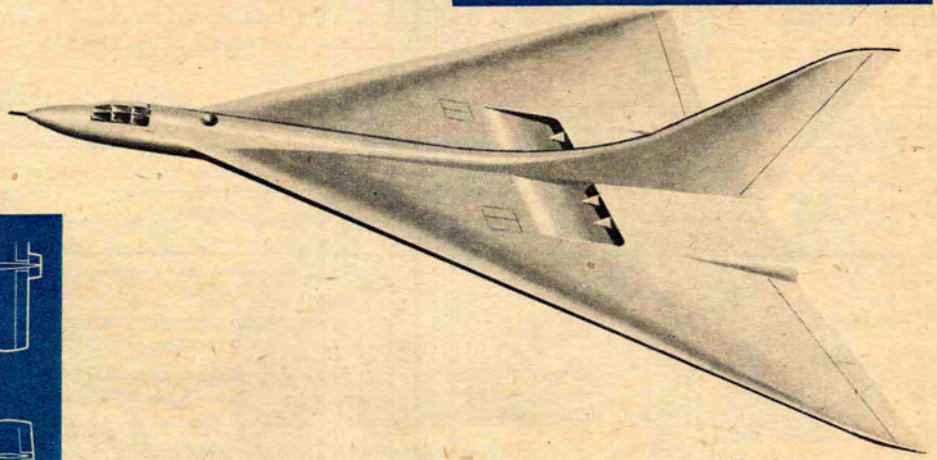
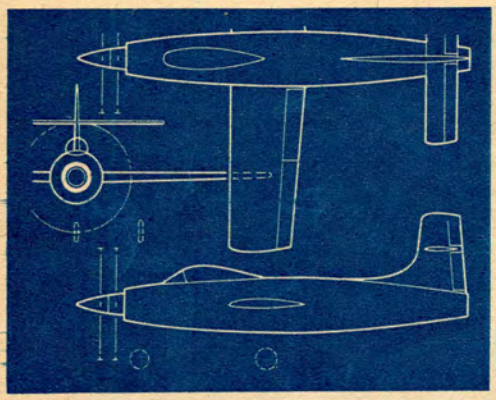
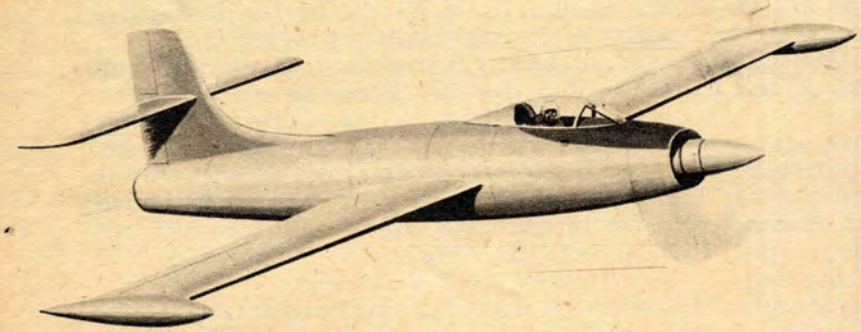


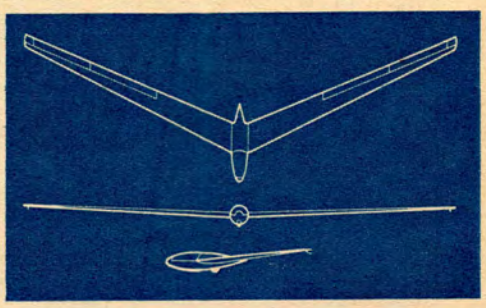
Intercontinental delta bomber by William E. Lang of Baltimore, Md., was selected as this month's best design. It is designed to operate at high altitudes and is powered by six 7000-lb.-thrust turbo-jet engines and one 10,000-lb.-thrust rocket. Maximum bomb load is 32 tons, range 8000 miles, top speed 800 mph. Landing gear doors serve as flaps. Wingspan is 131 ft., length 148 ft. Ceiling 70,000 ft.

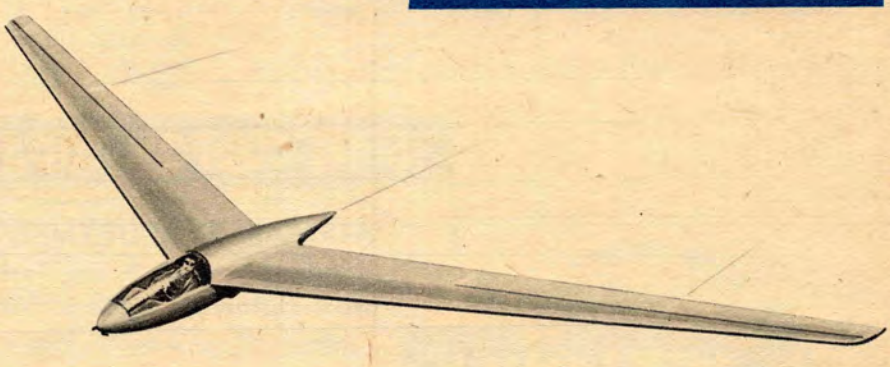




High-altitude interceptor by D. Rodenburg of Nijmegen, Holland. It is powered by a turboprop engine of 6000 hp driving two contrarotating propellers. Additional thrust is obtained from exhaust leading out of tail pipe. Armament consists of four 25 mm cannon firing through propeller arc. Span 40 ft., length 40 ft. Speed 700 mph.







Flying wing sailplane by Robert Eldridge of Bakersfield, Calif. The wing is of all-wood construction, plywood covered. It is not unlike the German Horten IV glider, with very high aspect ratio wing which has a span of 48 ft. Fuselage is made from wingtip tank. All controls are at the trailing edge, yaw being accomplished by small sections at the tips which act as drag spoilers. Top speed is 90 mph.

Air-Trails has opened its columns to those who are interested in presenting plans for "aircraft of the future." Rules governing the competition are as follows: Three-view sketches of the proposed aircraft will be required. These should be not less than 8½ x 11 inches for the entire three-views. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information of power plant(s) estimated performance, dimensions, and explanations of any usual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The design may be of any type: commercial aircraft, military planes (fighters' bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of $25. Payments of $5 will go to the runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 304 E. 45th St., New York 17, N. Y. Editors regret that because of large number of entries they cannot enter into correspondence on A. of V

SPARTAN TRAINING

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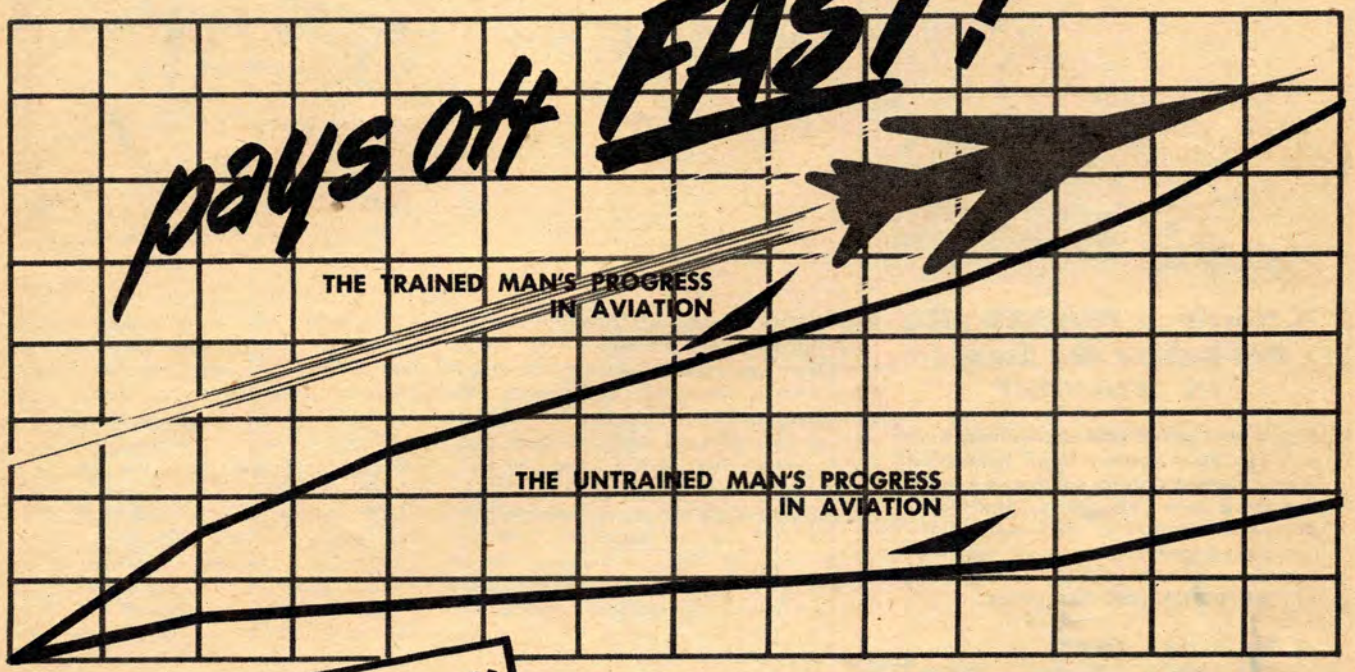

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5N10

Air Adventurers Club

■ In last month's Air Adventurers Department we told you how the jet age in aviation has increased career opportunities for you young men and women. We pointed out how higher speeds, new engines, new aircraft designs, more complex instrumentation and supersonic navigation have all contributed to a vast expansion of *all* careers in aviation.

To continue this series on your opportunities in this jet-powered age of flight, we contacted many of the leaders of the industry to see just *what* the jet age has produced in the realm of careers for you young airmen and airwomen of the future. We asked them in particular about aviation engineers. The response was prompt and pleasant.

With minor exceptions, depending upon the particular field in which the manufacturer contacted was active, the stories were the same. In fact, the pattern ran so uniform that citing the situation at one company will do for all, and give a pretty sharply focused picture duplicated with minor changes at plants across the country.

Let's enlarge that picture as we found it at the Boeing Airplane Company and see what some of the finer details look like close up under the lens of our Air Adventurers' "careeroscope."

The business of aviation engineering is unique in many ways, and perhaps the most unique and important characteristic is that the more aviation engineers seem to accomplish, the more they seem to have to do. As fast as some research is concluded the very fact of this conclusion seems to open up still newer fields of research to be explored. Certainly a happy situation for a lot of you young folks with an eye to a career in aviation engineering.

The vast surplus of engineers predicted for the postwar era did not materialize. True, after the war Boeing, along with many other companies engaged in war production, found it necessary to reduce their staffs of semi-skilled employees. Boeing's total employment dropped from a wartime high of 75,000 to a low tide mark of 18,000—*but,* even with this reduction of total employment, Boeing launched a recruiting program for more engineers.

During this reduction of employees none of the Boeing engineering staff who showed promise was released. According to company policy, to prune the engineering staff was unthinkable, for to their way of long-range thinking, when business is slack due to completion of war-time contracts, or normal business recessions, it is the engineering staff that produces the new ideas to keep the company alive and in the running for future expansion and orders.

For the past five and a half years, Boeing's engineering payroll has climbed continually. In the Seattle division alone the staff has grown at a rate of almost 50 persons a month, to a total of 4,600 engineers at present. Of these, 3,400 are graduate engineers. In the Wichita division the engineering staff has grown to 1,400, with over half of that number entitled to the rank of "engineer."

The fact that this increase in engineering staff personnel began during the slow period after the war indicates it is not just another rearmament boom. It has been carefully planned all along to take care of growing needs and future plans of expansion. Certainly the construction going on now of a new five-story engineering and office building in Seattle is proof that (*Continued on page* 54)

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SPECIFICATIONS
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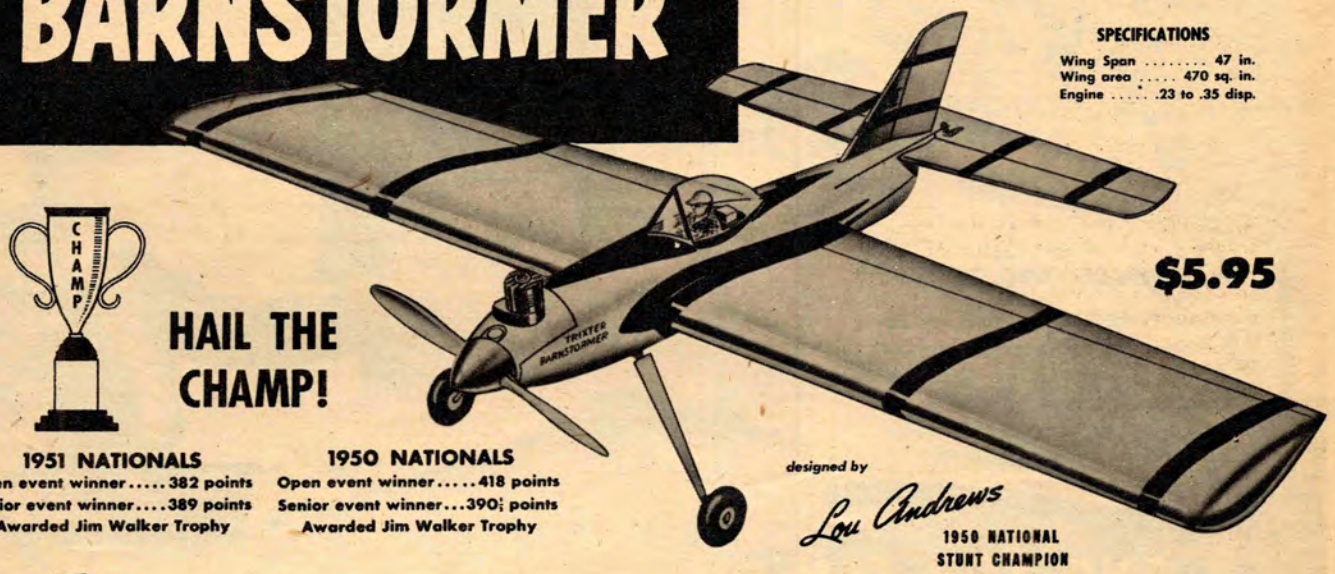
Engine ..... .23 to .35 disp.



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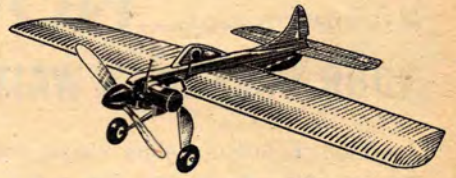

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TRAIN IN MIAMI -- AIR CAPITAL OF THE WORLD

America's Most Urgent Need:

A Department of Guided Missiles

■ Guided missiles are never going to be used with full effectiveness until there is a separate service—a corps of specialists—to set requirements, guide development and production and finally launch these weapons of tomorrow.

That's not the way it is now. Each service—Air Force, Army and Navy—has its own missile group. Each service is fighting to retain as many different kinds of missiles as it can in the never-ending argument over the responsibility for the global defense of the United States.

And so there is duplication of effort and duplicate procurement of missiles. There is no single, overall guiding policy which directs the destiny of our entire missile program.

And that is wrong.

The guided missile is not an extension of one of the standard service arms. Instead it is a new weapon concept which demands new thinking, unbiased approaches and open minds.

For the second time in the modern history of warfare, we have a new basic scheme for unleashing destruction on the enemy. (The first, of course, was the airplane. It suffered through all the pains of attachment to the Army and the Navy. It fought long and hard for independent status. And under independence, it grew to a potent military arm.)

We've got to do the same with missiles. If we don't, we are throwing away military advantages which are even now stifled under the myriad layers of weapon development at all levels in the three services.

During its short lifetime, the guided missile has taken an awful kicking around. The Germans, who were the first to popularize the idea with their string of *Wunderwaffen* (wonder weapons), were also the first to experience the inter-service squabbles which have since haunted the missile.

When the war was over, we imported German missiles, technicians—and squabbles, complete in every respect. And now we have the spectacle of Air Force and Army and Navy haggling over where a missile makes the transition from long-range artillery to a long-range bomber, or whether wings are for lift or control.

Instead of haggling, we could have complete accord. Instead of several missiles with the same mission in life, we could have one in quantity production. Instead of missiles for the sake of service prestige and propaganda, we could have missiles for the defense of the Atlantic community.

And here's how it could work.

First, you create a specialists' corps apart from the three existing services. Call them what you will—and they'll be nicknamed everything from Rocketeers to the Space Patrol—their single job will be guided missiles. They'll work with and in the services, determining the requirements, coordinating the separate desires for weapons of similar types. They'll instruct at all levels of organization in the logistics, operation and launching of missiles; and in the event of a shooting war, they'll do the shooting—at targets selected by the theater commander or his staff.

Second, as missile usage expands, you enlarge this specialists' corps and give it high-level representation. To do this, you don't borrow some generals or admirals, and change their hats. You make the appointments from within the ranks, and if there has to be a thirty-year-old equivalent of Gen. Vandenberg, you go along with the idea. And you see to it that there is representation on the Joint Chiefs of Staff, up at the policy levels where the original plans for these weapons have to see the first light of military day.

Third, with the service really on independent status, you plug its men into the gaps in the other services. Just as the Marines station an airman on the ground to direct ground-support aircraft, so you send a missile expert along to call for specialized kinds of ground support by missiles. Or you make missile fire-control officers for battleships and cruisers. Or you assign missile men to the launching sites which fire off pilotless and piloted aircraft as the mission requires.

That's all it takes. You start with an elite corps, trying the experiment. You let the corps grow and give it authority along with responsibility. You make it a separate service and supply specialists from a pool of men trained in all branches of missile warfare.

Everybody profits, including the taxpayer.

AIR PROGRESS of yesteryears

The Pulitzer Race—Part 2

The last event, run off in 1925, terminated official sponsorship of air racing by military services, but the "big race" made aviation history by producing speeds which stood up for seven years.

By ROGER HUNTINGDON

Scene of 1925 Pulitzer Races, Mitchel Field, Long Island. Observers at top of pylon are cheering on Lt. Cyrus Bettis as he rounds the marker in his Curtiss R2C-1 racer. Capable of speeds over 250 mph on 510 hp, and landing speed under 70 mph, its efficiency was surprisingly high for that era.

■ The earlier Pulitzer races produced the general idea that the monoplane was not suitable for fast racing aircraft. As a result of this, the development of the monoplane as we know it today was probably held back for as much as a decade.

This unfortunate condition was created by the crude cantilever wings which produced thick high-drag airfoils and the big cumbersome radiators which were the order of the day.

All monoplane designs of both services except the Army-Verville R-3 were dropped in preparation for the 1923 Pulitzer. In the case of the Verville, the Lamblin radiators were replaced with wing surface units and a new bored-out Curtiss D-12 engine developing 510 hp was installed, all of which raised top speed to 230 mph with the gear retracted. Other than these changes and the installation of the new 510-hp Curtiss engine in one of the 1922 R-6's, the Army undertook no new designs for 1923.

The Navy, on the other hand, instituted a broad Pulitzer program in that year. Entirely new Wright biplane racers were designed, fitted with wing surface radiators and a new high-compression Wright 12-cylinder engine giving about 700 hp. They were still pretty bulky, grossing 2,860 lbs., but they showed a top speed of 238 mph in initial tests.

The Navy's main project was an astonishing new Curtiss R2C-1 model, developed from the 1922 Army racers and mounting the new 510-hp engine. The R3C-1 was the 1925 version of this model and was practically identical externally to the 1923 jobs. These new racers were actually slightly larger and heavier than the 1922 ships, but the upper wing panel was lowered to the fuselage top level and the overall drag was considerably less. New metal props were used and the top speed tested out to 255 mph.

With this line-up, the Navy ruled the decided favorite in the 1923 contest. The race was run on October 6th at St. Louis before some 48,000 paying customers. Seven planes were entered—the two new Curtiss R2C-1's, two Wrights, the two 1922 Army-Curtiss racers, and the Verville R-3. At the last minute, the Verville developed engine trouble and was unable to start, so the other six were raced in three heats.

Navy Lt. "Al" Williams came out on top in the first R2C-1 at an average of 243.68 mph, flying wide open with one lap at 245. The other R2C-1 was second at 241.8 mph. The two Navy-Wright racers finished third and fourth, the third-place average being 230.1 mph and their fastest lap at 231.7 mph. The two Army racers brought up the rear with the best lap for the new 510-hp engine at 220.0 mph; the best with the old 465-hp job was 218.8 mph.

So what did the 1923 race prove? For one thing, it sounded the final death knell on the heavy, bulky, high-powered pursuit, such as typified by the 700-hp Wright racers. The Wright had some 200 hp more than the Curtiss, but was still no match for it either in speed or maneuverability. From then on, the pursuit plane trend was toward smaller, lighter jobs—climaxing with the famous Boeing P-26 of 1933, grossing only about 3,000 lbs. and with a top of 230 mph on 600 hp.

As for monoplane vs. biplane, one can't compare directly as the Verville R-3 didn't run the 1923 race. But it obviously couldn't have won better than fifth on its speed alone. It still carried the handicap of thick wing sections and, strangely enough, this wasn't even offset by a retractable landing gear.

The Army's faith in the monoplane was partly vindicated in the next 1924 contest, however. The Navy didn't enter this one, being preoccupied by the Schneider seaplane race, but they sold one of their 1923 R2C-1's to the Army for the contest. Unfortunately this ship crashed on a test flight a few days before the race and couldn't be repaired in time. There were no other new designs, so the starting field consisted of only four planes—the two much-used 1922 Curtiss racers, both with 510-hp engines, the Verville R-3 as raced in 1923, and a slightly modified stock Curtiss PW-8A pursuit of 460 hp.

The race was run on October 4th as the final event of the Dayton Air Races, at McCook Field. Burt Skeel crashed when the wings of his Curtiss collapsed as he pulled out of a dive at the starting line. The race was then between the remaining Curtiss and the Verville, both having 510 hp and nearly the same top speeds. It was close all the way, the difference in their lap times being only around six seconds in 31 miles, but Harold Mills finally came out on top in the Verville R-3 at 216.55 mph. The Curtiss (*Continued on page* 56)

All Data Courtesy General Electric
Aircraft Gas Turbine Department

*Approximate

DESIGNATION	F 2 H	F 3 D	F 4 D	F 4 U	F 7 U	F 9 F	XF 10 F	X-2	X-4	X-5	F-80	F-84E	F-84F	F-86A	F-86D	XF-88	F-89	XF-90	XF-91	XF-92	F-94
POPULAR NAME	Banshee	Skynight	Skyray	Corsair	Cutlass	Panther					Shooting Star	Thunderjet		Sabre	Sabre	Voodoo	Scorpion				Starfire
MANUFACTURER	McDonnell	Douglas	Douglas	Chance Vought	Chance-Vought	Grumman	Grumman	Bell	Northrop	Bell	Lockheed	Republic	Republic	No. Amer.	No. Amer.	McDonnell	Northrop	Lockheed	Republic	Convair	Lockheed
WINGSPAN	41′	50′		41′		*38′			27′	33′	39′	36′	34′	37′	37′	40′	56′	40′	31′	31′	39′
LENGTH	40′	45′		34′		*38′			23′	33′	34′	37′	43′	37′	41′	55′	53′	56′	43′	42′	40′
GROSS WT. (lbs.)	16,000	27,000		16,000		*15,000+			7000	10,000	16,000+	17,000+	*25,000	16,000	18,000	20,000+	40,000+		*30,000	15,000	16,000+
RANGE (miles)				*1500		*1500+					CR-500	CR 600+	CR 850+	CR 500+	CR 500		CR 500				1400
CREW	1	2	1	1	1	1	1		1	1	1	1	1	1	1	1	2	1	1	1	2
MAX. SPEED (mph)	600	530		450		580		Supersonic	Transonic	Transonic	600	600+	600+	650+	650+	650+	600	650+	650+	650+	600
NO. OF ENGINES	2	2	1	1	2	1	1	1	2	1	1	1	1	1	1	2	2	2	1	1	1
MODEL No.	J34-22	J34-36	J40-10	R 2800-32		J48-4	J40			J35-17	J33-23	J35-17	J65	J47	J47-17	J34-15	J35-21	J34	J47	J33-29	J33-29
MANUFACTURER	West.	West.	West.	P & W	West.	P & W	West.	Wright	West.	Allison	Allison	Allison	Wright	G-E	G-E	West.	Allison	West.	G-E	Allison	Allison
TYPE	Turbojet	Turbojet	Turbojet	Piston	Turbojet	Turbojet	Turbojet	Rocket	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet	Turbojet
RATING (each)	3150 lbs.	3600 lbs.	7200+lbs.	2500 hp		6250 lbs.	7200+lbs.			4900 lbs.	5200+lbs.	5000 lbs.	7200 lbs.	5200+lbs.	5200+lbs.	4000 lbs.	5,000 lbs.	4000 lbs.	5200+lbs.	5200 lbs.	5200+lbs.
ADDITIONAL POWER															After-burner	After-burner	After-burner		Rocket	After-burner	After-burner

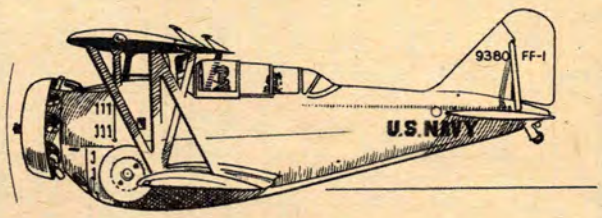
DESIGNATION	A D	A F	A J	A M	A 2 D	B-36	B-45	B-47	B-50	XB-51	XB-52	SA-16	P2V-4	P 4 M	P 5 M	XP5Y	C 97	C-119	XC-120	C-123	XC-123A
POPULAR NAME	Skyraider	Guardian	Savage	Mauler	Skyshark		Tornado	Stratojet	Superfort			Albatross	Neptune	Mercator	Martin		Strato-freighter	Flying Boxcar	Packplane	Avitruc	Avitruc
MANUFACTURER	Douglas	Grumman	No. Amer.	Martin	Douglas	Convair	No. Amer.	Boeing	Boeing	Martin	Boeing	Grumman	Lockheed	Martin	Martin	Convair	Boeing	Fairchild	Fairchild	Chase	Chase
WINGSPAN	50′	60′	71′	50′	50′	230′	89′	116′	141′	55′		80′	100′	114′	102′		141′	109′	109′	110′	105′
LENGTH	39′	43′	63′	41′	54′	162′	75′	106′	99′	80′		61′	78′	86′	88′		110′	86′	83′	77′	77′
GROSS WT. (lbs.)		22,400	51,000	25,000		358,000	110,000	185,000	170,000			33,000	72,000	80,000			175,000	74,000	70,000	54,000+	
RANGE (miles)	1500		2400	1150		10,000	CR 800	3000	6000			2700	4200	2000		3,000+	4300	1100	1500	2500+	
CREW	1-3	1-2	3	1	1	15	4	3	11	2		6	9	9	9	12	5	5	5	2	2
MAX. SPEED (mph)	350	300+	*400	370		435+	550	*600	400+			270	300+	395	270	350+	350+	250+	250+	230+	
NO. OF ENGINES	1	1	2	1	1	6	4	6	4	3	8	2	2	2	2	4	4	2	*2	2	4
MODEL No.	R 3350-26W	R 2800-46	R 2800-34	R 4360-4	XT40-2	R 4360 41	J47	J47-23	R 4360-35	J47	J57	R 1820-76	R 3350-30	R 4360-20	R 3350-26	XT40-4	R 4360-35	R 4360-20W	R 4360-20	R 2800-52W	J47
MANUFACTURER	Wright	P & W	P & W	P & W	Allison	P & W	G-E	G-E	P & W	G-E	P & W	Wright	Wright	P & W	Wright	Allison	P & W	P & W	P & W	P & W	G-E
TYPE	Piston	Piston	Piston	Piston	Turboprop	Piston	Turbojet	Turbojet	Piston	Turbojet	Turbojet	Piston	Compound	Piston	Piston	Turboprop	Piston	Piston	Piston	Piston	Turbojet
RATING (each)	2500 hp	2400 hp	2600 hp	3250 hp	5500 hp	3500 hp	5200+lbs.	5800+lbs.	3250 hp	5200+lbs.		1425 hp	3250 hp	3250 hp	3250 hp	5500 hp	3250 hp	3250 hp	3250 hp	2100 hp	5200+lbs.
ADDITIONAL POWER			1 J33			4 J47's		18 Ratos		Rato				2 J33's						8 Ratos	

★ U. S. MILITARY AIRCRAFT SPECIFICATIONS CHART ★

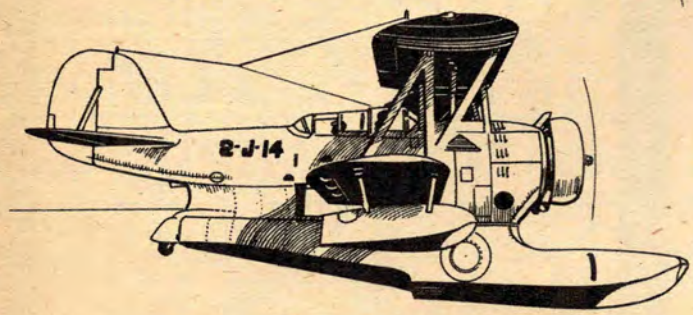
AIR PROGRESS

By DOUGLAS ROLFE

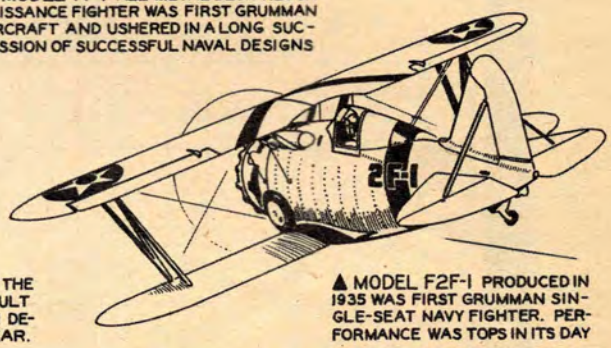
THE GRUMMAN STORY



▲ MODEL FF-1 ALL-METAL DECK RECONNAISSANCE FIGHTER WAS FIRST GRUMMAN AIRCRAFT AND USHERED IN A LONG SUCCESSION OF SUCCESSFUL NAVAL DESIGNS

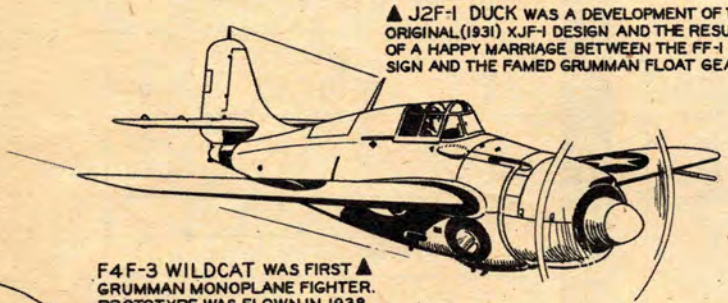


▲ J2F-1 DUCK WAS A DEVELOPMENT OF THE ORIGINAL (1931) XJF-1 DESIGN AND THE RESULT OF A HAPPY MARRIAGE BETWEEN THE FF-1 DESIGN AND THE FAMED GRUMMAN FLOAT GEAR.

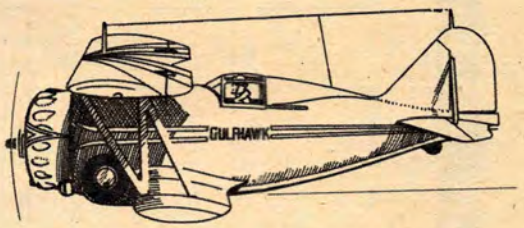


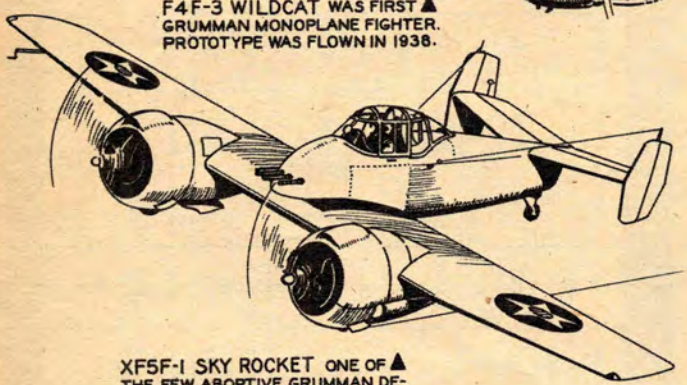
▲ MODEL F2F-1 PRODUCED IN 1935 WAS FIRST GRUMMAN SINGLE-SEAT NAVY FIGHTER. PERFORMANCE WAS TOPS IN ITS DAY

MODEL G-22 (BELOW) WAS COMMERCIAL VERSION OF THE F2F-1 (ACTUALLY HAD F3F-1 FUSELAGE, F2F WINGS), WAS BUILT EXPRESSLY FOR MAJOR AL WILLIAMS. ▼

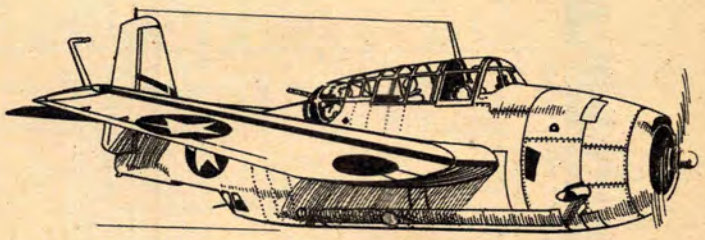


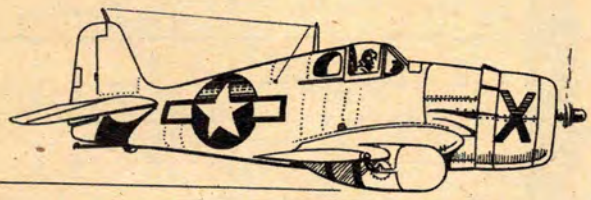
F4F-3 WILDCAT WAS FIRST ▲ GRUMMAN MONOPLANE FIGHTER. PROTOTYPE WAS FLOWN IN 1938.



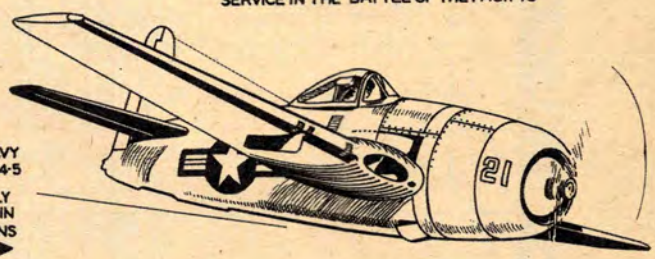


XF5F-1 SKY ROCKET ONE OF ▲ THE FEW ABORTIVE GRUMMAN DESIGNS BUT AN INTERESTING TYPE.





▲ TBF-1 AVENGER CARRIER-BASED TORPEDO-BOMBER. — IT DID YEOMAN SERVICE IN THE BATTLE OF THE PACIFIC

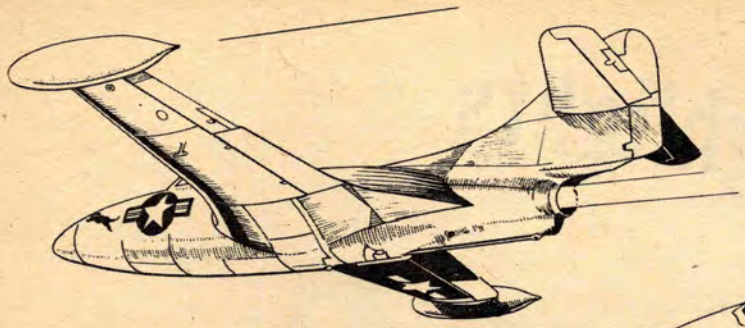


▲ F6F-5N HELLCAT FIRST GRUMMAN LOW WING NAVY FIGHTER AND SCOURGE OF THE JAPANESE AIR ARM IN 1944-5

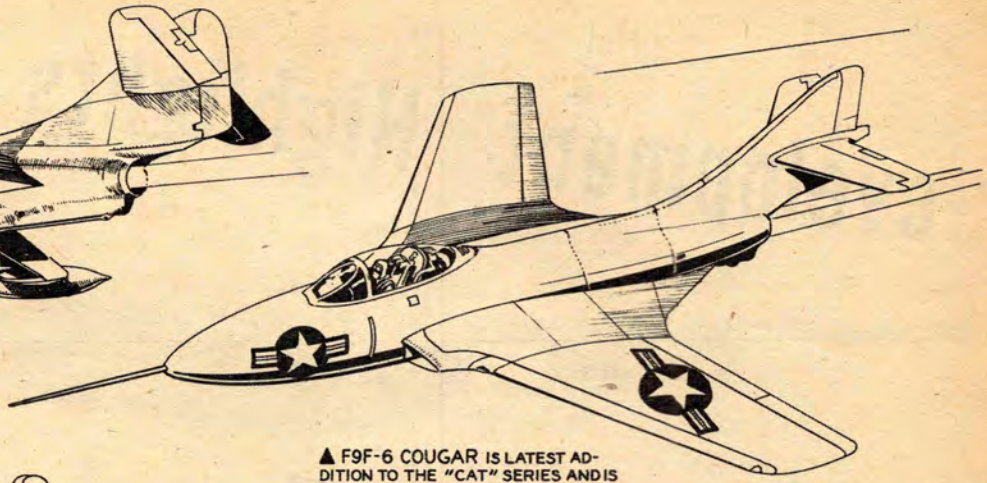
F8F BEARCAT WAS MORE POWERFUL BUT CONSIDERABLY LIGHTER THAN THE HELLCAT — IT WENT INTO PRODUCTION IN 1945 — TOO LATE TO ESTABLISH ITS SUPERIOR QUALIFICATIONS AS A FIRST-LINE CARRIER BASED U.S. NAVY FIGHTER ▶▶

The Grumman Aircraft Engineering Company set up shop in a small garage located at Baldwin, L. I., in January 1930—just as the great depression got under way. First products were limited to replacements for the then popular Loening Amphibian, and as the depression continued they even resorted to the manufacture of dural truck bodies. But all this time they were working on the development of a radically improved amphibious float gear which finally elicitated the attention of the Navy and resulted in a contract sufficiently large to enable them to produce the first Grumman designs.

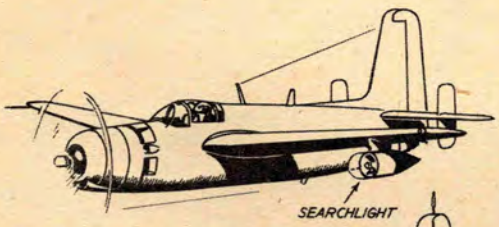
These appeared in 1932—all Navy types—and from that time on the U.S. Navy has rarely been without a preponder-



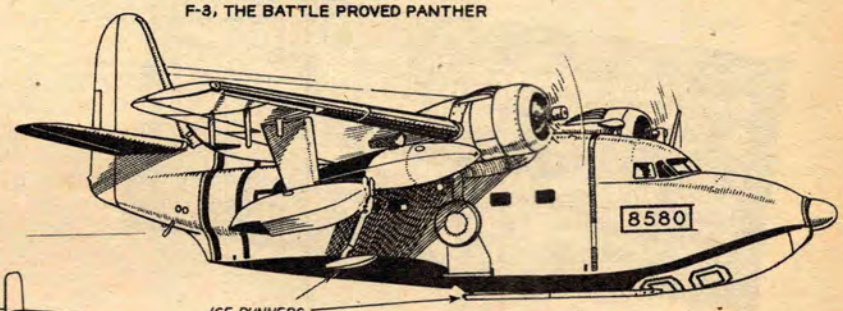
F9F-3 PANTHER FIRST JET ▲ FIGHTER TO BE USED IN COMBAT BY THE U.S. NAVY AND CURRENTLY EMPLOYED IN THE KOREA WAR IT IS ONE OF THE BEST OPERATIONAL JET FIGHTERS IN THE WORLD



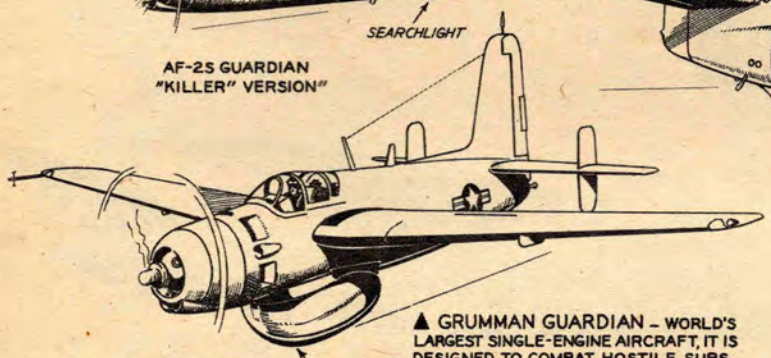
▲ F9F-6 COUGAR IS LATEST ADDITION TO THE "CAT" SERIES AND IS SWEPT WING SUCCESSOR TO THE F9-F-3, THE BATTLE PROVED PANTHER



AF-2S GUARDIAN "KILLER" VERSION"

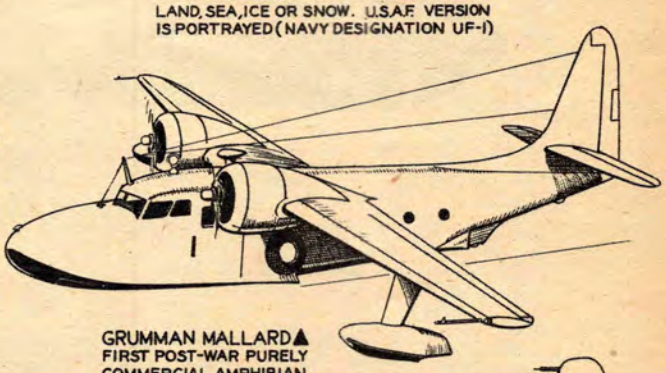


SA-16A ALBATROSS TRIPHIBIAN ▲ AIR RESCUE CRAFT CAN OPERATE FROM LAND, SEA, ICE OR SNOW. U.S.A.F. VERSION IS PORTRAYED (NAVY DESIGNATION UF-1)

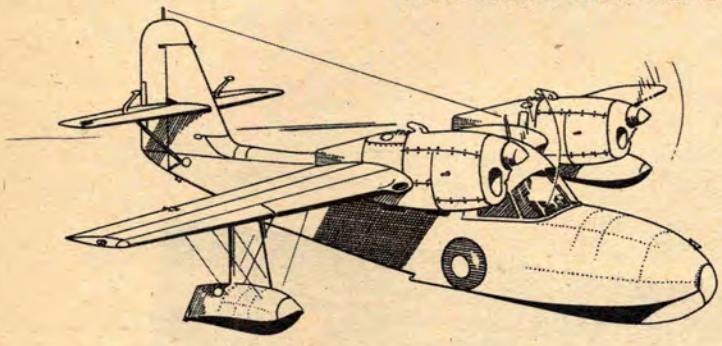


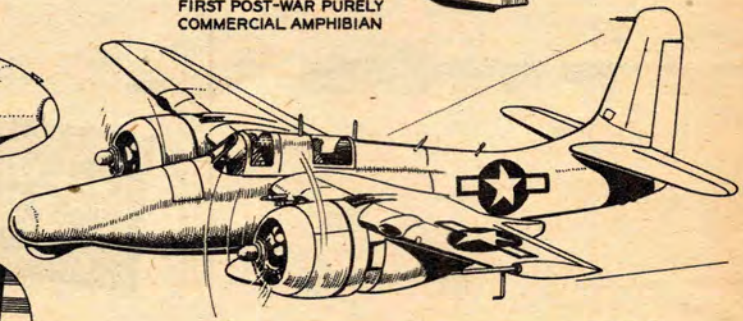
AF-2W GUARDIAN "HUNTER" VERSION

▲ GRUMMAN GUARDIAN – WORLD'S LARGEST SINGLE-ENGINE AIRCRAFT, IT IS DESIGNED TO COMBAT HOSTILE SUBS. "HUNTER-KILLER" TEAMS OF TWO WOULD FIND AND DESTROY ENEMY SUBMARINES SHOULD SUCH ACTION EVER BE NEEDED

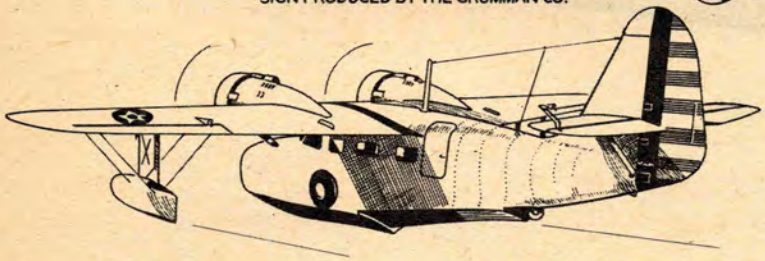


GRUMMAN MALLARD ▲ FIRST POST-WAR PURELY COMMERCIAL AMPHIBIAN





G-44 WIDGEON APPEARED IN 1939 ▲ TO BECOME SECOND COMMERCIAL DESIGN PRODUCED BY THE GRUMMAN CO.



DOUGLAS ROLFE

▲ F7F-3N TIGERCAT PRODUCED IN 1943 IT CAME BETWEEN THE HELLCAT AND THE BEARCAT – WAS ALSO A CARRIER-BASED FIGHTER

◀ OA-9 GOOSE MILITARY VERSION OF THE MODEL G-21 – FIRST (1937) COMMERCIAL GRUMMAN DESIGN AND FORERUNNER OF A NOTABLE SERIES OF MEDIUM SIZE AMPHIBIOUS BOATS

ance of Grumman aircraft. In fact, during the years 1934-1939, all U.S. Navy single-seat fighters were of Grumman origin, and even today the Navy stills leans heavily on this first-class firm for its airplane equipment.

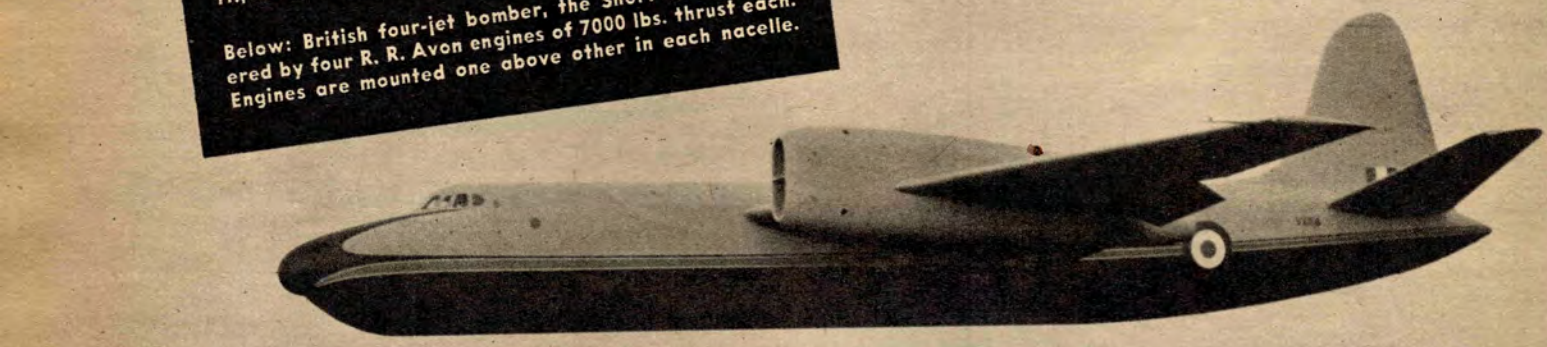
Record of Grumman aircraft during World War II was outstanding—the Hellcat alone contributing heavily to the containment and final destruction of the Japanese air arm. Today the Grumman Panther jet fighter has already established a notable record in the Korean air war.

In the commercial field the Grumman plane has an equally excellent reputation—particularly in the field of amphibious aircraft in which it remains preeminent.

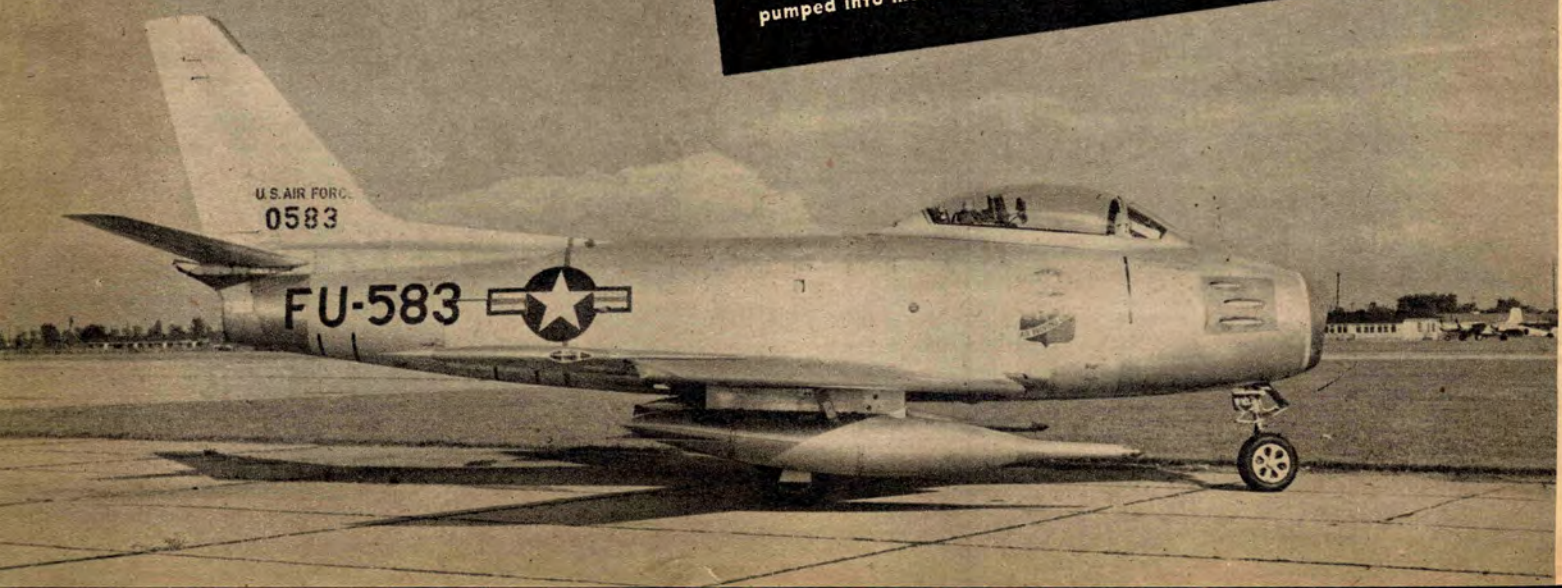
Development Highlights

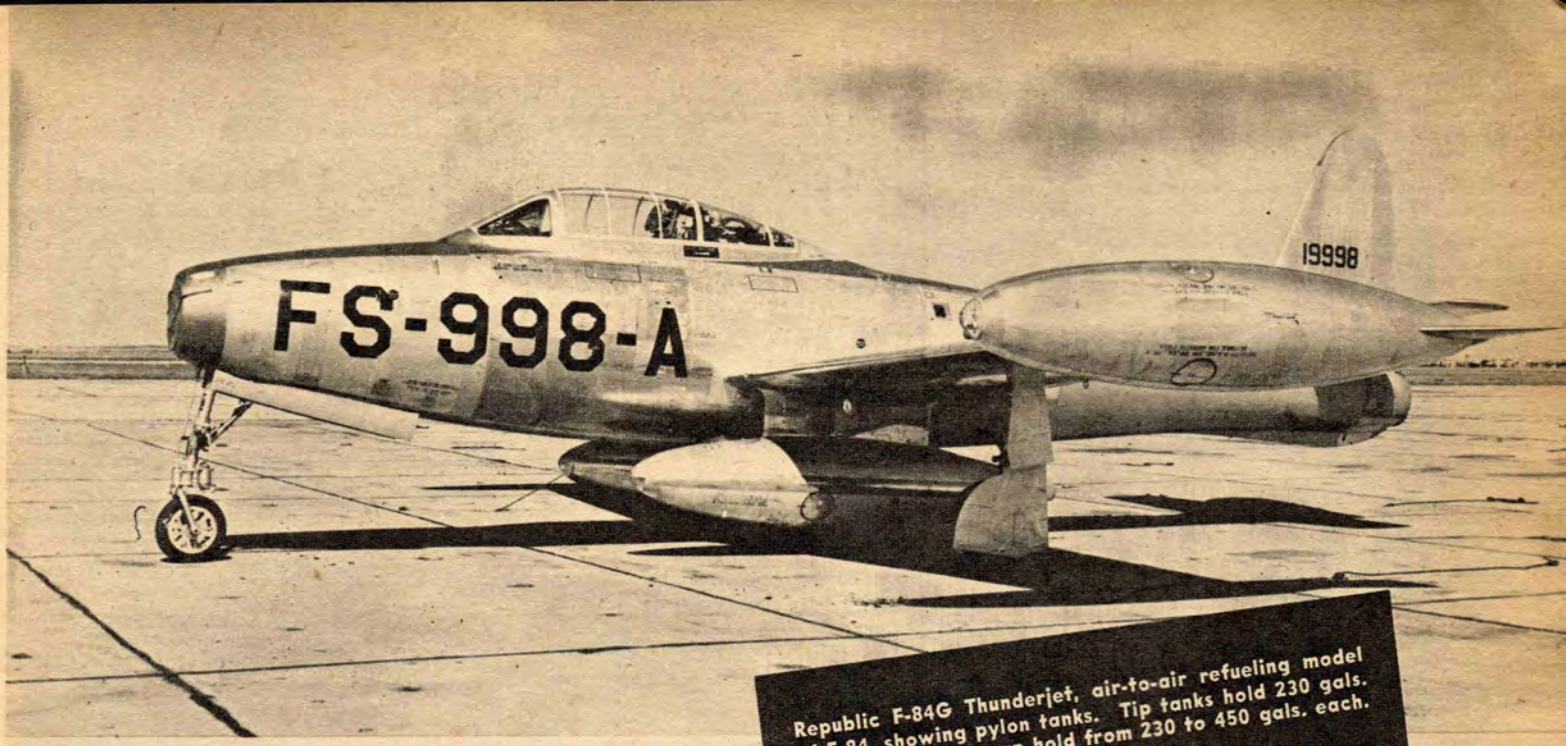
Boeing YB-52 taking off on its first flight. Its eight jet engines develop 50,000 lbs. of thrust. Span is 185 ft., length 153 ft. and height to top of rudder 48 ft.

Below: British four-jet bomber, the Short SA-4. Powered by four R. R. Avon engines of 7000 lbs. thrust each. Engines are mounted one above other in each nacelle.



North American F-86E Sabre with probe auxiliary tanks for air-to-air refueling. Contents of these can be pumped into main tanks. Fins on tanks are for stability.

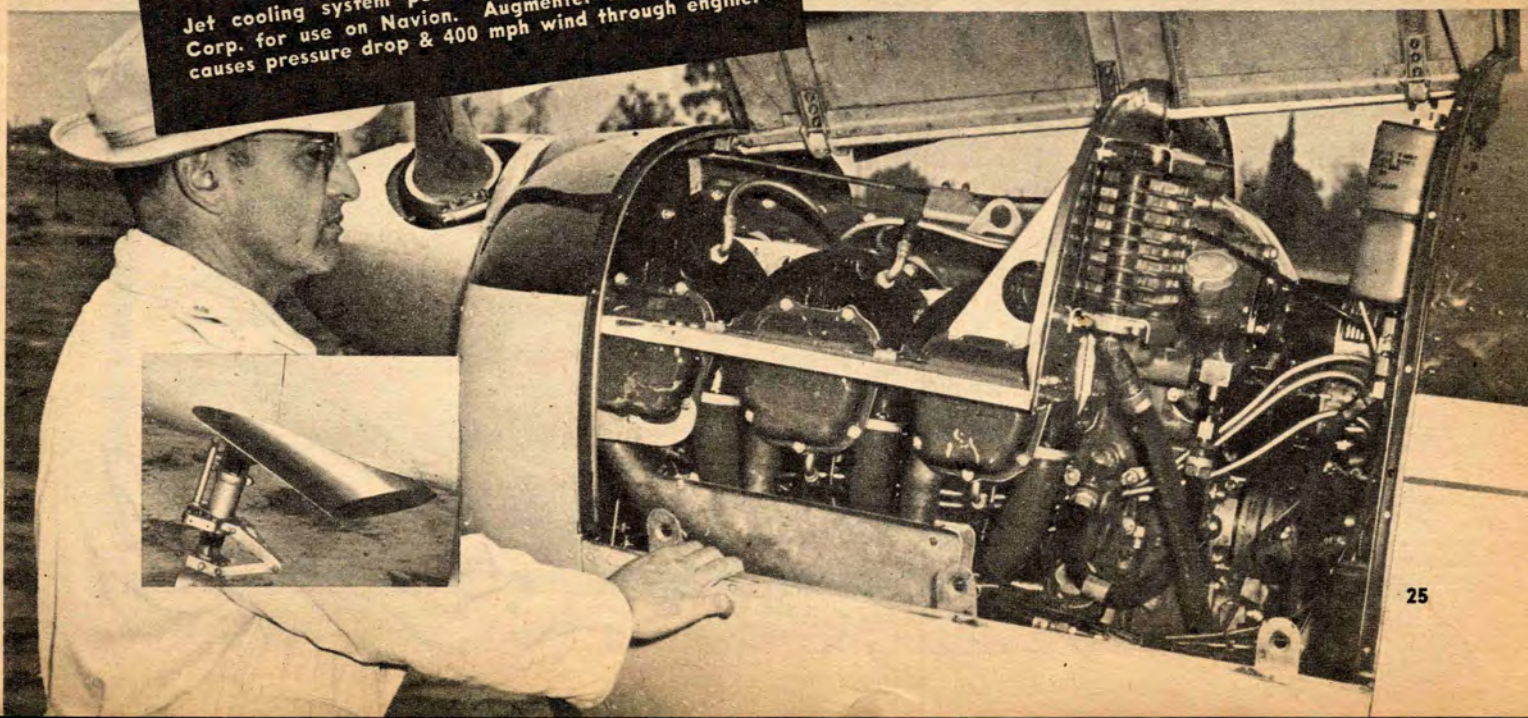




Republic F-84G Thunderjet, air-to-air refueling model of F-84, showing pylon tanks. Tip tanks hold 230 gals. each, pylon tanks can hold from 230 to 450 gals. each.

Below: Piasecki YH-21 Work-Horse, rescue helicopter designed for Arctic work. Can carry 14 troops or 12 litter cases. 1400 hp. Wright R-1820 Cyclone engine.

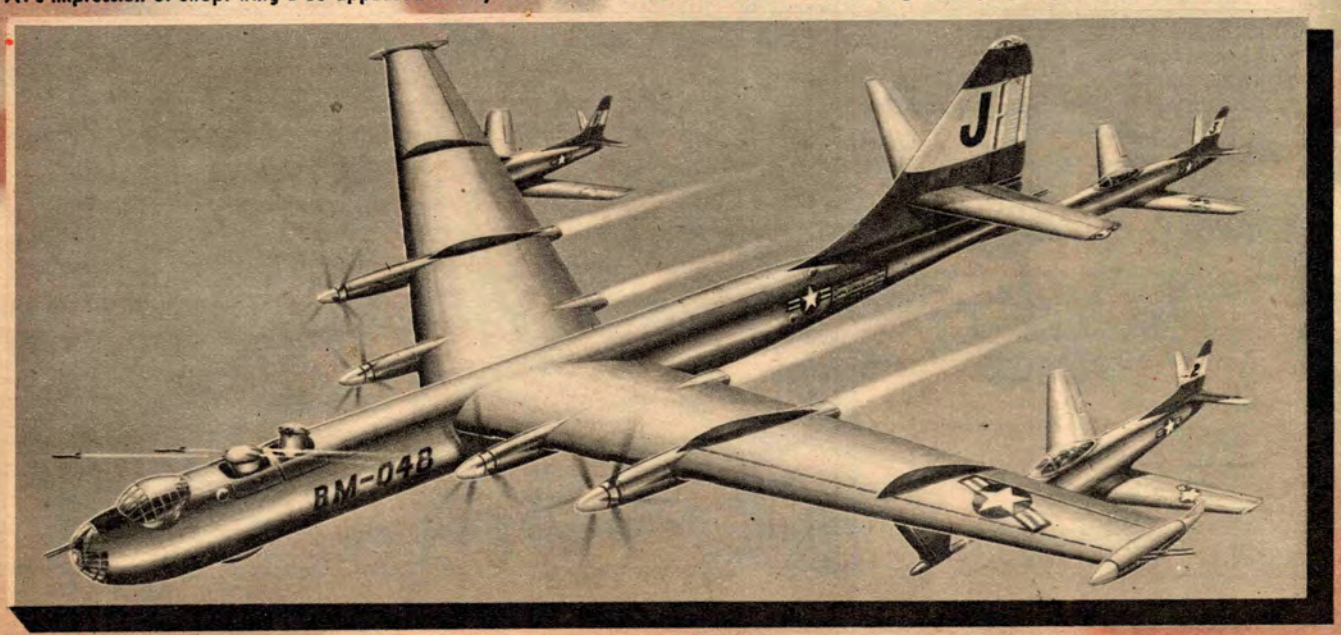
Jet cooling system perfected by Fletcher Aviation Corp. for use on Navion. Augmenter tube, in inset, causes pressure drop & 400 mph wind through engine.



Flying Battleships of the USA and USSR

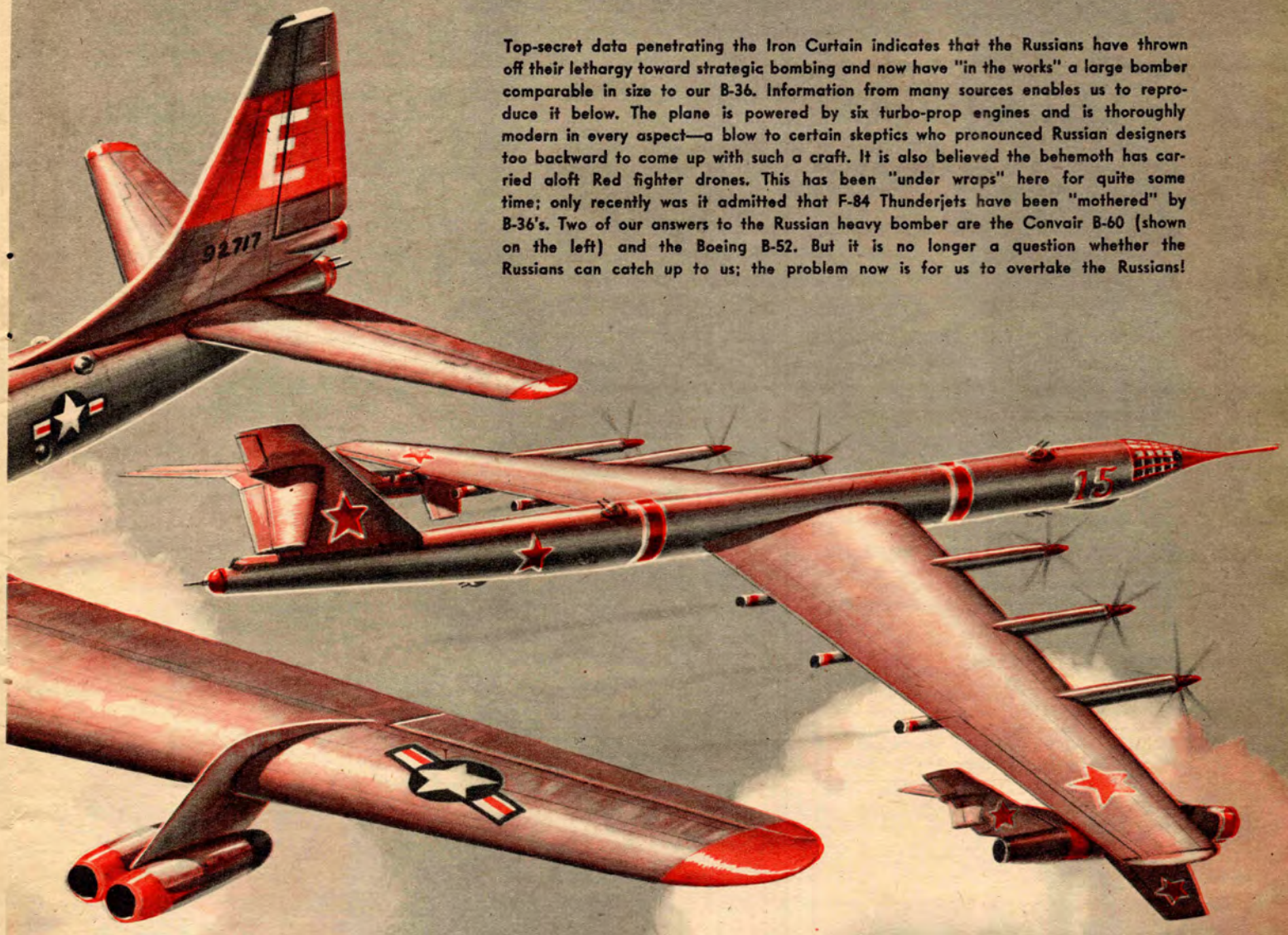
Illustrated by FRANK TINSLEY

AT's impression of swept-wing B-36 appeared in July 1950 Issue. At that time AF was considering turbo-prop engine power for the aircraft.

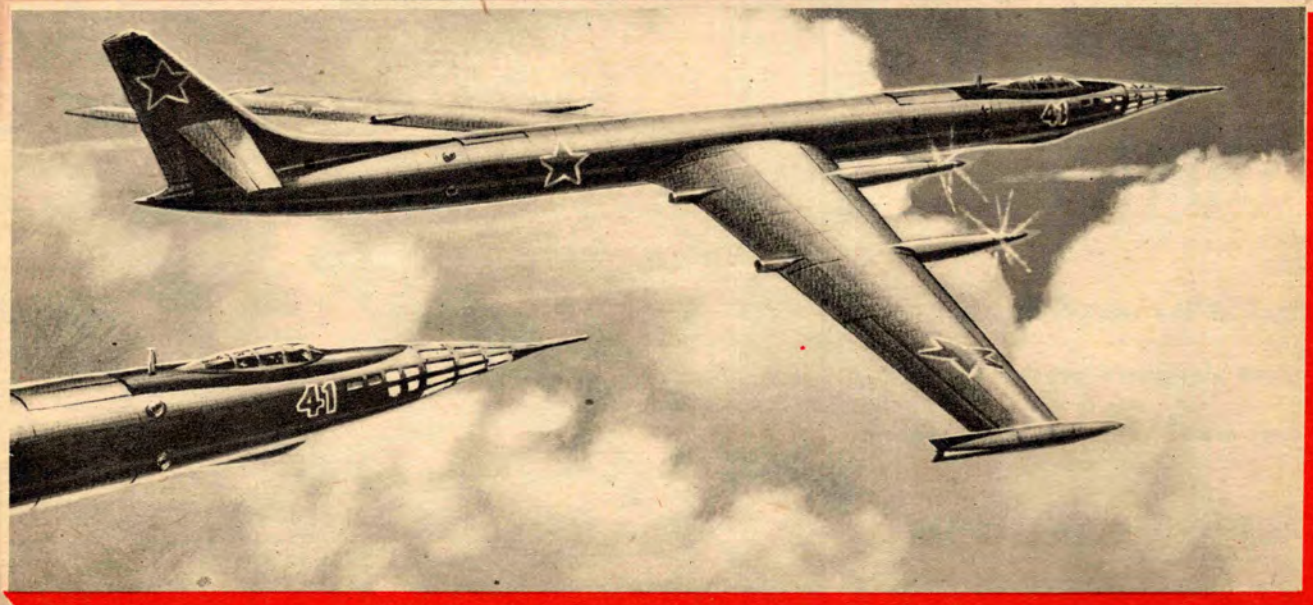


FRANK TINSLEY

Top-secret data penetrating the Iron Curtain indicates that the Russians have thrown off their lethargy toward strategic bombing and now have "in the works" a large bomber comparable in size to our B-36. Information from many sources enables us to reproduce it below. The plane is powered by six turbo-prop engines and is thoroughly modern in every aspect—a blow to certain skeptics who pronounced Russian designers too backward to come up with such a craft. It is also believed the behemoth has carried aloft Red fighter drones. This has been "under wraps" here for quite some time; only recently was it admitted that F-84 Thunderjets have been "mothered" by B-36's. Two of our answers to the Russian heavy bomber are the Convair B-60 (shown on the left) and the Boeing B-52. But it is no longer a question whether the Russians can catch up to us; the problem now is for us to overtake the Russians!



In July 1951 AT published this preliminary sketch of Russian heavy bomber. Note close resemblance to latest concept above.



Robert L. "Bob" Palmer, Jr., of Burbank, Calif., builds highly accurate models for wind tunnel tests. His Go Devil, Chief, Squaw, Papoose, Warrior, Mars and Venus designs—many kitted by Veco—have established him as a top-notch stunt designer and flyer. Won flying scale at the Nationals and 66 stunt trophies. Now 34, started modeling at 12; married, has 6-year-old daughter. Suffered set-back during 1948 in midst of stunt career when industrial accident severed 4 fingers on right hand. Designed glove-gauntlet to hold control line handle in his palm, now flies better than ever! Then switched to smaller engine, large wing area set-up to get better all-weather flyers. Took 1st at big Tucson meet this year with Smoothie.

Mr. Palmer's "Smoothie" Stunter

One of the world's top-ranking stunt designers presents a fine fast model for .29-.35 motors

By ROBERT L. "BOB" PALMER

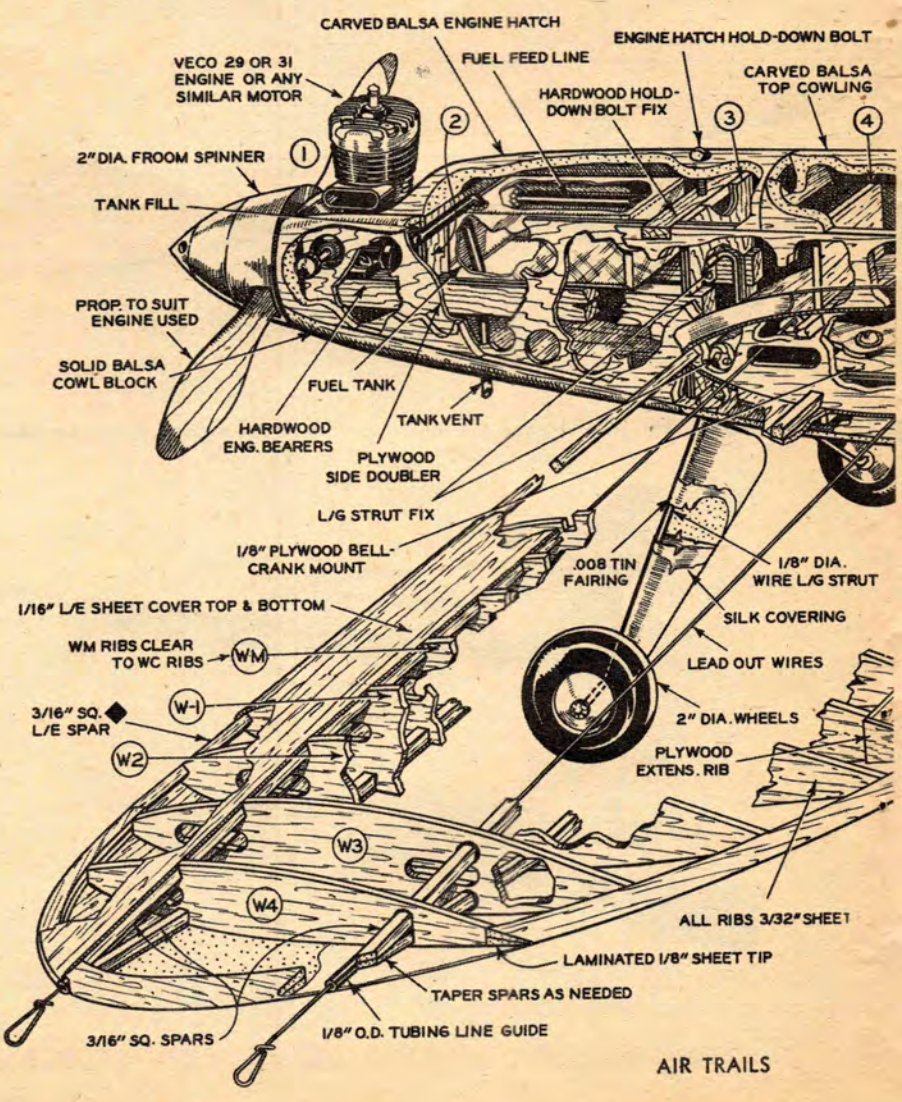
■ Just as the name implies, *Smoothie* is a smooth flying stunt model designed to meet all requirements for contest winning performance. Span is 51", the area, 495 square inches minus flaps; length is 31", the engine recommended is .29 to .35 displacement; weight 2 lbs. 6 oz. to 2½ lbs.; speed, 65 to 70 mph.

How many times upon going out to the flying park have you heard remarks to this effect, from fellows interested in models, when asked about flying at the next contest: "Aw, I wouldn't have a chance . . . So and so will be there. They are too good at flying. I couldn't beat them!" If you are one of these fellows, ask yourself this: "Do I want to compete and try to be a winner? Maybe if I did, I'd win over them someday." If your answer is "yes," then follow these instructions.

First of all, the model is one of the most important things to be considered, for without a good model you can't even begin to do good competition stunts, no matter how much you want to. If you purchase a model kit, or design one of your own, how do you know if that particular design will do competition stunts suitable for top contest work?

The only way to learn that is to be interested enough to ask someone who knows models, preferably a consistent winner, and have him answer the questions that are bothering you. You will find that most modelers are willing to help you. They will fly your model for you, and tell you what is wrong, and the improvements to make. Fly your model and have them tell you what you do wrong and how to improve on stunts you can already do.

It will pay in the long run to start with a good model, and an experienced modeler's suggestions. I have talked to most of the top winners and all of them are a swell bunch of fellows, willing to help anyone who wants to learn to be a top-notch flyer. I have helped modelers over



difficulties and now some of them are expert stunters.

To the interested reader who is already a stunter, or who wants to become a stunt man, here are four rules to follow to become a top competitor:

1. *A Good Model:* This is most important. The stunt kits on the market are very good, and usually, if followed to the letter, will fly well.

2. *A Dependable Motor:* The various model airplane motors advertised are very good. The .29 to .35 displacement motors are best for stunt; run according to instructions from the manufacturer.

3. *A Good Tank:* A good tank is very important. Its design will either make or break a stunt model.

Clarence Lee, who drafted the original plans for the *Smoothie*, also designed the tank for this model. He has experimented with tanks for four years and knows most of the answers on good tank design.

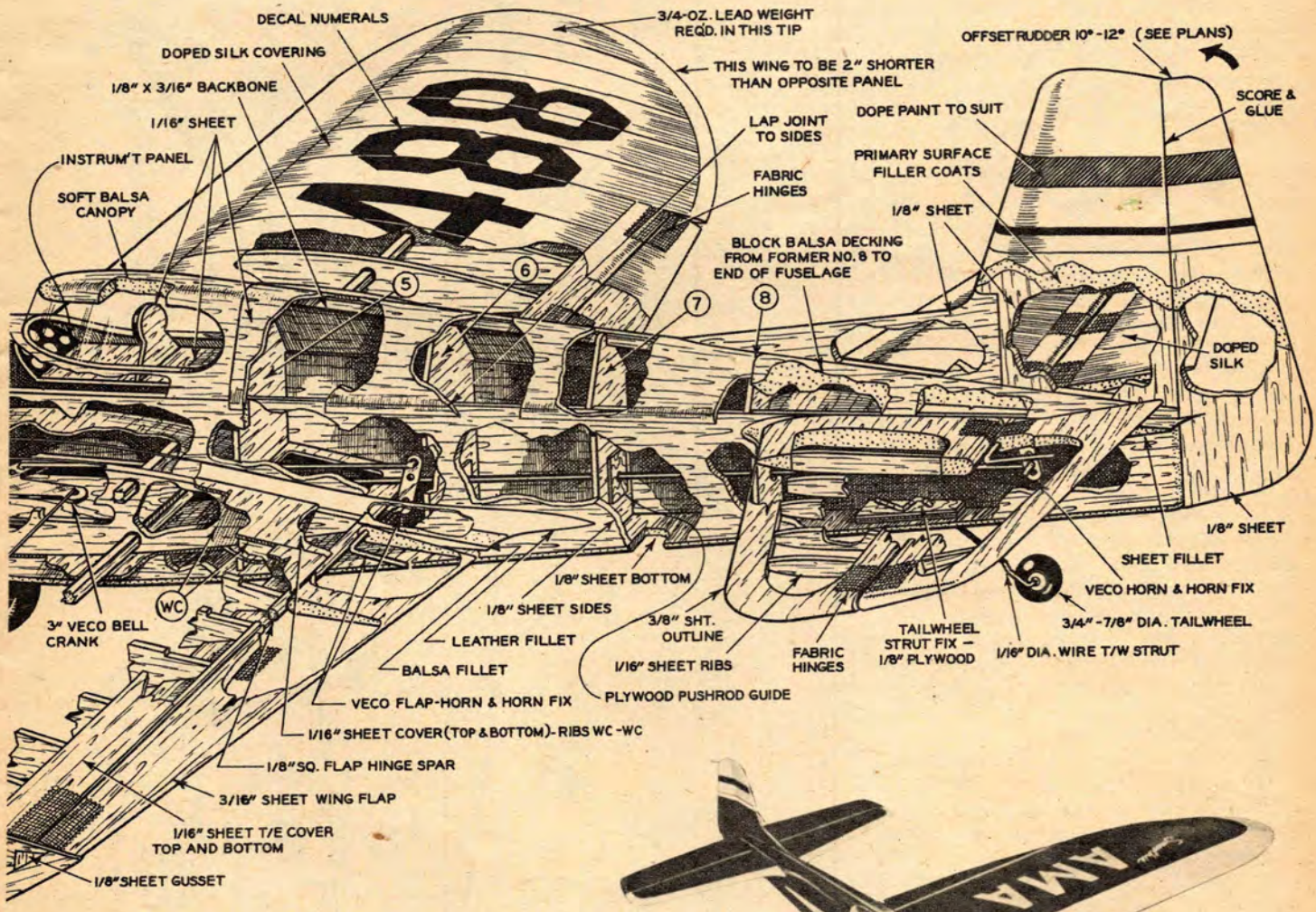
The location of the tank to the intake of the engine is just as important as the design.

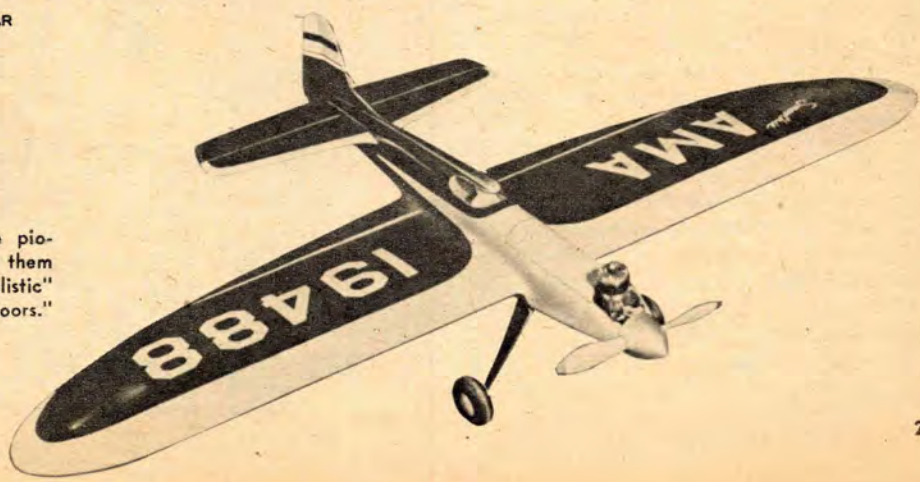
4. *Practice Flying:* It takes constant practice to be able to fly well. After finding the right combination—that is, propeller, engine, and model —practice constantly to fly with more ease each successive time.

Trying stunts that are difficult should also be practiced. For example, stunting with a wider radius than necessary, then tightening them up as you become more acquainted with the looping radius of the model. Try those stunts on which you are especially rusty.

It seems as though most modelers prefer flying under ideal conditions. When the wind comes up they go home. Yet when contest day rolls around the wind may be blowing a gale. So you want to be sure and practice in the wind as well as under ideal conditions. This can be attained by having a model that will fly in the wind. I had the same difficulties, and so I kept right on trying to find an answer to a "wind" model. *Smoothie* is the answer. I have flown this model in high winds, and I have won every time.

It takes a large area to stunt a model commonly known as a "barn-door" type. In *Smoothie*, I have cut





Working flaps on stunt models were pioneered by Palmer. His success with them ushered in an entirely new type of "realistic" model that could vie with "barn-doors."

down the wingtip area, eliminating too much lift, and as a result there is no buffeting and bouncing in the wind. It takes a real model to fly under all conditions.

Start the fuselage with the plywood side doublers and motor mounts. Screw and glue mounts to plywood, and glue plywood to sheet balsa sides. Make landing gear, attach fairings of tin. Bend wire so gear has 11" tread. Be sure and cut hole for wing in fuselage, also the flap.

Assemble all the bulkheads. Plank bottom of fuselage up to the gear. Wait until later to assemble top of fuselage. Bolt the motor in, and put the nut plates in place; glue belly blocks and spinner blocks in place.

All spars of the wing, including trailing edge are 3/16" square.

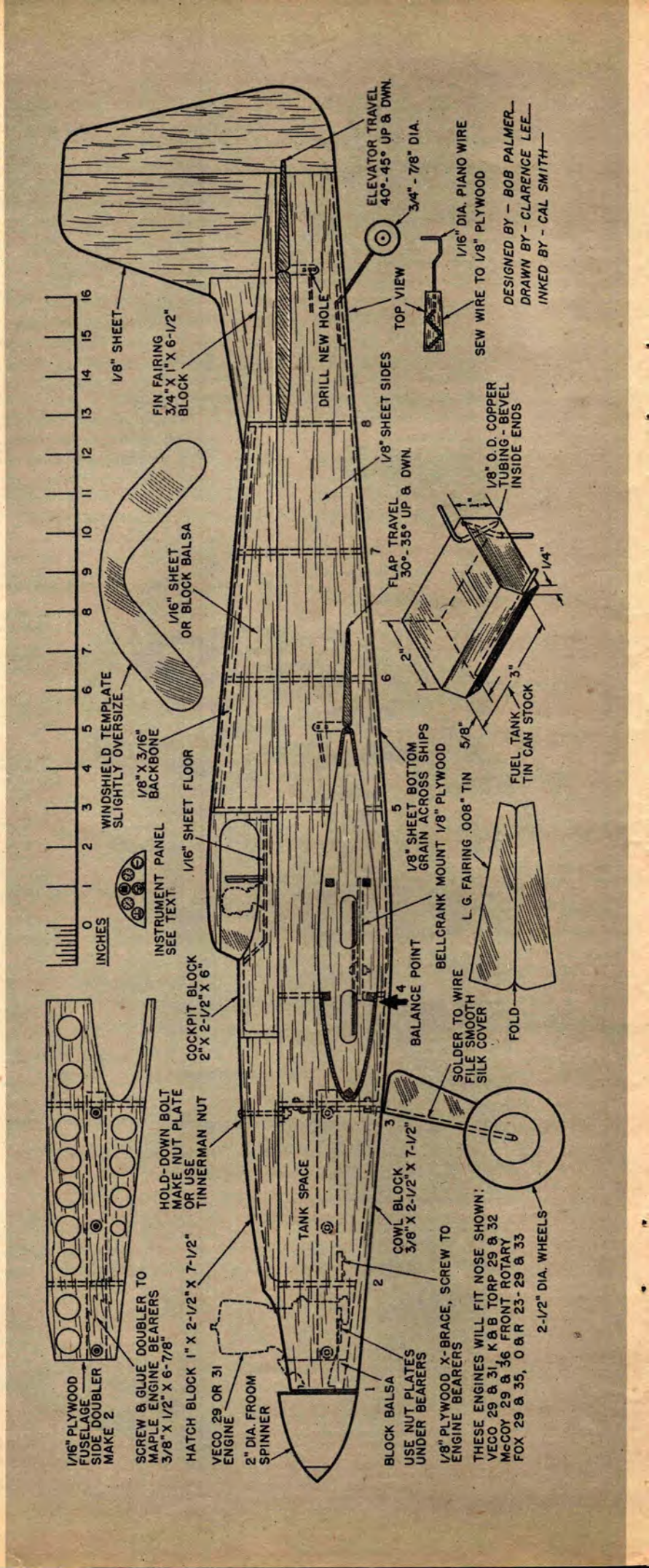
The first step in assembling the wing is to prepare the trailing edge. Slightly bevel both sides of a 3/16" square, and glue in place 1/16" x 1" sheet balsa as shown. Splice in the center where wing will run through fuselage with 1/16" x ¾" balsa. Stand the trailing edge assembly on edge in a straight line; mark from the center 1" for first rib, then every two inches for eight spaces on left side and seven spaces on the right side.

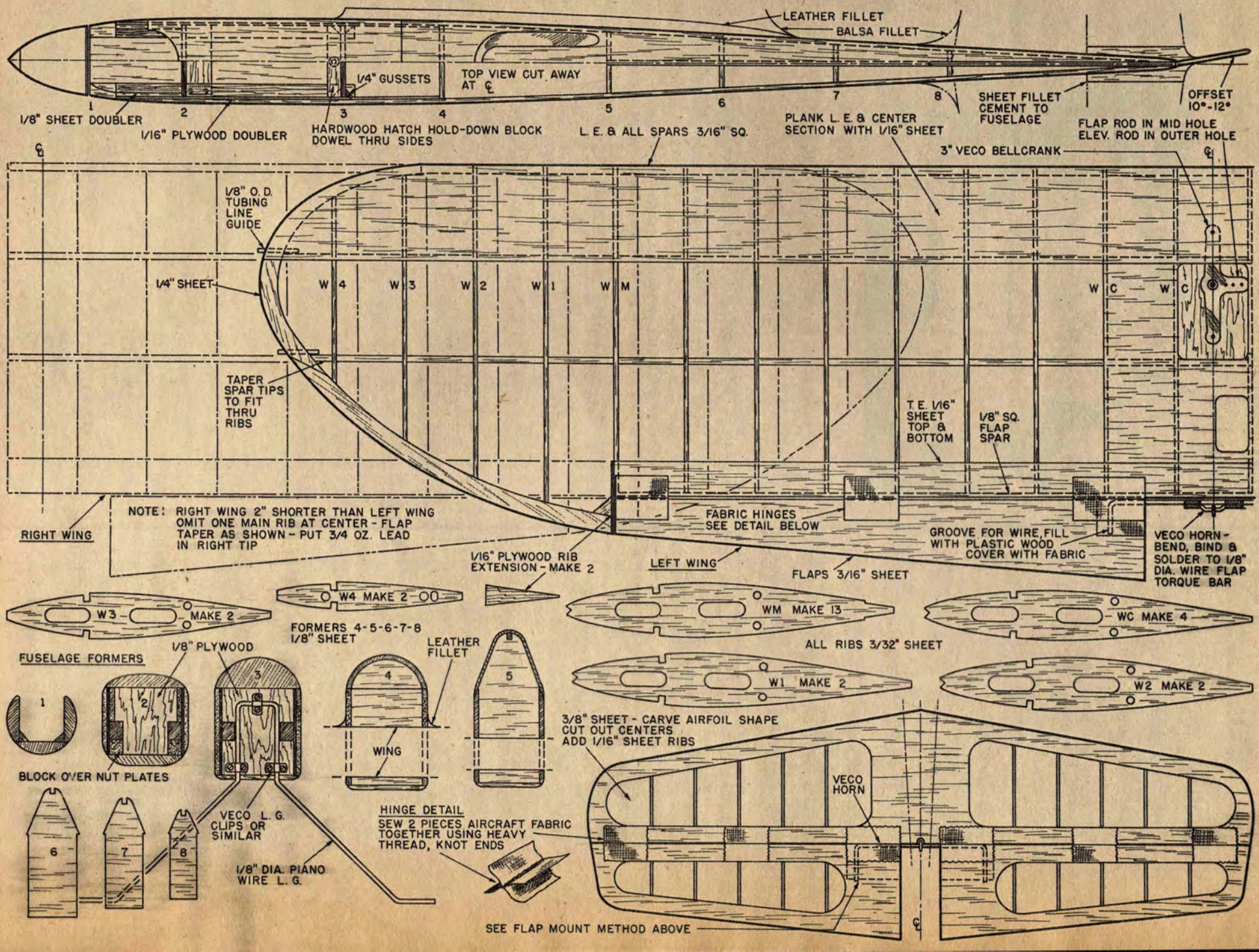
Splice two 3/16" square by 36", with a piece of 1/16" x 4" plywood and mark the same as the trailing edge. Assemble the wing upright on the table, putting the ribs in vertically. Attach the spars and the leading edge. Secure these with rubber bands. Sight wing and line ribs in straight line. Glue all joints and then insert the two spars through the ¼" holes; glue a splice of 3/16" x 4" in the center. These spars go on out to the tip. Cut tip ribs out and attach to forward and rear spars. Cut tips of laminated ⅛" balsa, and attach to wing and spars.

Be sure and assemble the plywood extension to main wing. Install bellcrank floor of plywood and glue six times around spars. Screw bellcrank in, using a second nut, the first one on under bellcrank. Wires should be attached to bellcrank before installation; use small grommets in bellcrank, soldering wire to grommet to prevent cutting large hole in bellcrank. Plank the leading edge and center section. Use brass tubing for lead-outs at wingtips.

Make flaps of 3/16" balsa. Sand and taper. Remember to make inboard flap 2" longer. Take Veco flaphorn and splice with ⅛" piano wire as shown in plans, and solder well. Line up flaps and measure from center line to flap for installing flaphorn. Make hinges of aircraft tape, sew together on sewing machine, knot each end. Install flaps on wing and cover with silk. Dope the leading edge and all edges of the wing two times. Cut silk 1" oversize and draw through a pan of water. Pull out all wrinkles and dope to wing. Let dry and apply two coats of clear dope.

Further construction details may be found on the AT full-size plans available.


DESIGNED BY – BOB PALMER
DRAWN BY – CLARENCE LEE
INKED BY – CAL SMITH
ELEVATOR TRAVEL 40°-45° UP & DWN.
3/4" - 7/8" DIA.
1/16" DIA. PIANO WIRE
SEW WIRE TO 1/8" PLYWOOD
TOP VIEW
DRILL NEW HOLE
1/8" SHEET
FIN FAIRING 3/4" X 1" X 6-1/2" BLOCK
1/8" SHEET SIDES
1/8" O.D. COPPER TUBING - BEVEL INSIDE ENDS
FLAP TRAVEL 30°-35° UP & DWN.
1/16" SHEET OR BLOCK BALSA
WINDSHIELD TEMPLATE SLIGHTLY OVERSIZE
1/8" X 3/16" BACKBONE
1/16" SHEET FLOOR
INSTRUMENT PANEL SEE TEXT
1/8" SHEET BOTTOM GRAIN ACROSS SHIPS
BELLCRANK MOUNT 1/8" PLYWOOD
L.G. FAIRING .008" TIN
FUEL TANK TIN CAN STOCK
COCKPIT BLOCK 2" X 2-1/2" X 6"
BALANCE POINT
SOLDER TO WIRE FILE SMOOTH SILK COVER
FOLD
HOLD-DOWN BOLT MAKE NUT PLATE OR USE TINNERMAN NUT
TANK SPACE
COWL BLOCK 3/8" X 2-1/2" X 7-1/2"
HATCH BLOCK 1" X 2-1/2" X 7-1/2"
VECO 29 OR 31 ENGINE
2" DIA. FROOM SPINNER
BLOCK BALSA
USE NUT PLATES UNDER BEARERS
1/8" PLYWOOD X-BRACE, SCREW TO ENGINE BEARERS
THESE ENGINES WILL FIT NOSE SHOWN:
VECO 29 & 31, K & B TORP 29 & 32
McCOY 29 & 36 FRONT ROTARY
FOX 29 & 35, O & R 23- 29 & 33
2-1/2" DIA. WHEELS
1/16" PLYWOOD FUSELAGE SIDE DOUBLER MAKE 2
SCREW & GLUE DOUBLER TO MAPLE ENGINE BEARERS 3/8" X 1/2" X 6-7/8"
0 INCHES
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16


LEATHER FILLET
BALSA FILLET
1/4" GUSSETS
TOP VIEW CUT AWAY AT ℄
1
2
3
4
5
6
7
8
SHEET FILLET CEMENT TO FUSELAGE
OFFSET 10°-12°
1/8" SHEET DOUBLER
1/16" PLYWOOD DOUBLER
HARDWOOD HATCH HOLD-DOWN BLOCK DOWEL THRU SIDES
L. E. & ALL SPARS 3/16" SQ.
PLANK L. E. & CENTER SECTION WITH 1/16" SHEET
FLAP ROD IN MID HOLE ELEV. ROD IN OUTER HOLE
3" VECO BELLCRANK
1/8" O. D. TUBING LINE GUIDE
1/4" SHEET
W 4
W 3
W 2
W 1
W M
W C
TAPER SPAR TIPS TO FIT THRU RIBS
T. E. 1/16" SHEET TOP & BOTTOM
1/8" SQ. FLAP SPAR
RIGHT WING
NOTE: RIGHT WING 2" SHORTER THAN LEFT WING OMIT ONE MAIN RIB AT CENTER - FLAP TAPER AS SHOWN - PUT 3/4 OZ. LEAD IN RIGHT TIP
FABRIC HINGES SEE DETAIL BELOW
GROOVE FOR WIRE, FILL WITH PLASTIC WOOD COVER WITH FABRIC
VECO HORN - BEND, BIND & SOLDER TO 1/8" DIA. WIRE FLAP TORQUE BAR
1/16" PLYWOOD RIB EXTENSION - MAKE 2
LEFT WING
FLAPS 3/16" SHEET
W3 - MAKE 2
W4 MAKE 2
WM MAKE 13
WC MAKE 4
FORMERS 4-5-6-7-8 1/8" SHEET
ALL RIBS 3/32" SHEET
FUSELAGE FORMERS
1/8" PLYWOOD
LEATHER FILLET
W1 MAKE 2
W2 MAKE 2
3/8" SHEET - CARVE AIRFOIL SHAPE CUT OUT CENTERS ADD 1/16" SHEET RIBS
WING
BLOCK OVER NUT PLATES
VECO L. G. CLIPS OR SIMILAR
VECO HORN
HINGE DETAIL
SEW 2 PIECES AIRCRAFT FABRIC TOGETHER USING HEAVY THREAD, KNOT ENDS
1/8" DIA. PIANO WIRE L. G.
SEE FLAP MOUNT METHOD ABOVE

guest editorial

R/C IS HERE!—TO STAY?

By DR. WALTER A. GOOD
Chairman, AMA Radio Control Comm.

■ Simplified R/C licensing has arrived and R/C'ers are already flying legally on the 27 megacycle band without the need of an operator's license. The new FCC rules are simple: 1. You get a station license by sending in FCC Overprinted Form 505. 2. You may build or buy your transmitter providing it is crystal controlled on 27.255 mc. plus or minus 0.04% and its power input does not exceed 5 watts.

It's a lucky day for the modelers because this is the *first* time that the FCC has granted the privilege of building and operating a transmitter with only a simple form-application for the station license. The only way it could be made easier is to have the FCC drop around to your house with a filled-out form so you could sign it and attach it to your transmitter, but the FCC is too understaffed for that!

How did we come by this 27 mc. band? It wasn't easy and it wasn't quick. In fact it's been six long years. The AMA-R/C Committee started action with the FCC in April 1946 by requesting a modification of the Amateur Rules for R/C models. This was a blind alley. When using Amateur frequencies, *only* the Amateur can hold the control stick and there are *no* exceptions.

In January, 1947, other frequencies for R/C were requested from the FCC with no results other than conferences and more correspondence. In 1948 the FCC "attended" the Olathe National Meet and informed the AMA of the radio violations observed at the R/C event. This same year the AMA proposed 27 mc. be considered for R/C. It slowly became clear that the Radio Regulations simply didn't have provisions for R/C models. 1949 brought the 465 mc. Citizen's Band which was a definite step in the right direction.

At the 1949 Nationals the FCC again "attended," and this time cited several Amateurs with rule violations. Fortunately none lost his license, but there were a few anxious months. Again 27 mc. was proposed and this time the FCC expressed grave doubts that 27 mc. would work for R/C because of the interference problem; interference to the models, that is.

To prove that 27 mc. would work, the AMA obtained an Experimental License KG2XDA in 1950 and the R/C committee, with the help of others, made over 300 flights in Washington, Chicago, Detroit, Los Angeles, San Francisco and other cities. The results showed interference in only 3% of the flights! With such good flight results, the R/C committee laid the 27 mc. proposal on the desk of FCC Commissioner George Sterling, who saw the reasonableness of the problem and carried the ball for us through the FCC. There the FCC rules were actually (*Continued on page 54*)

model matters

AT pays $5 for exclusive air model photographs used here, so get those shutters warmed up and start in shooting!

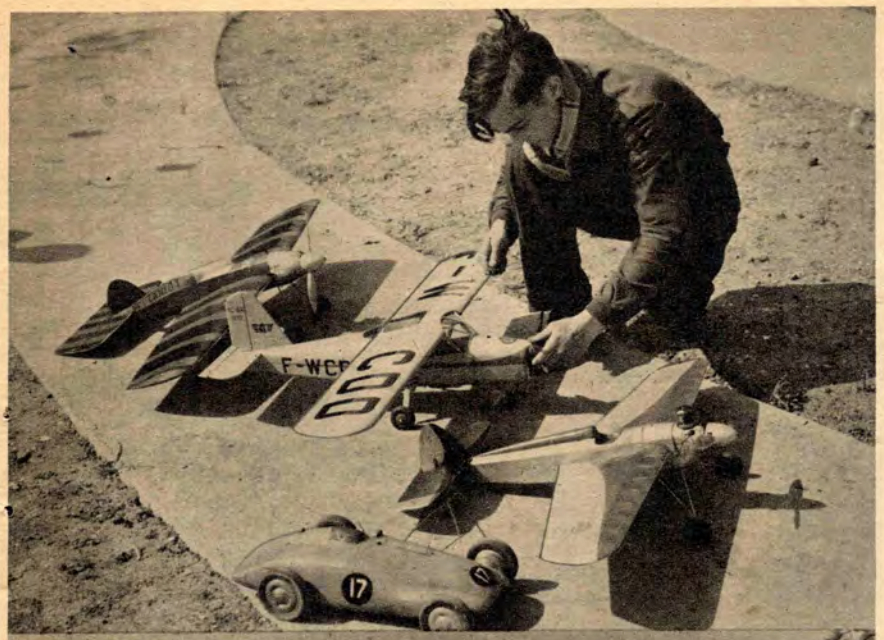
Rocket-powered F/F (above) appeared at German toy fair. Takes off on dolly which drops free; after rocket fuel is exhausted, container released for glide.

These lads (below) are looking for a glider, claims Dick Massoney of Detroit who made shot at '51 Nats. Extreme heat opened up cracks (!) in NAS field.

Gerard Laniot (top, right) is French national model champ—a man of wide interests. All plane models are controline; high winger: flying scale lightplane.

A very visible controline Curtiss P-40F (center, right). Allen Tremor of Newburgh, Ind., uses Ohlsson .60. Job spans 48 in.; cockpit details include seat.

Bottom, right: This is a 9.5 ft radio-controlled Aeronca using Atwood Superchamp with 2 speed control by Joe Pilorale, Morristown, N. J. Bob Tucker cranks up.



the Prexy speaks

THIS ORGANIZED ACTIVITY

By FRANK B. BUSHEY
President, Academy of Model Aeronautics

■ Being a school teacher pays off sometimes —I took my spring vacation, piled my family into the old station wagon and hied myself to Washington. Here's a first-hand report on organized activity progress.

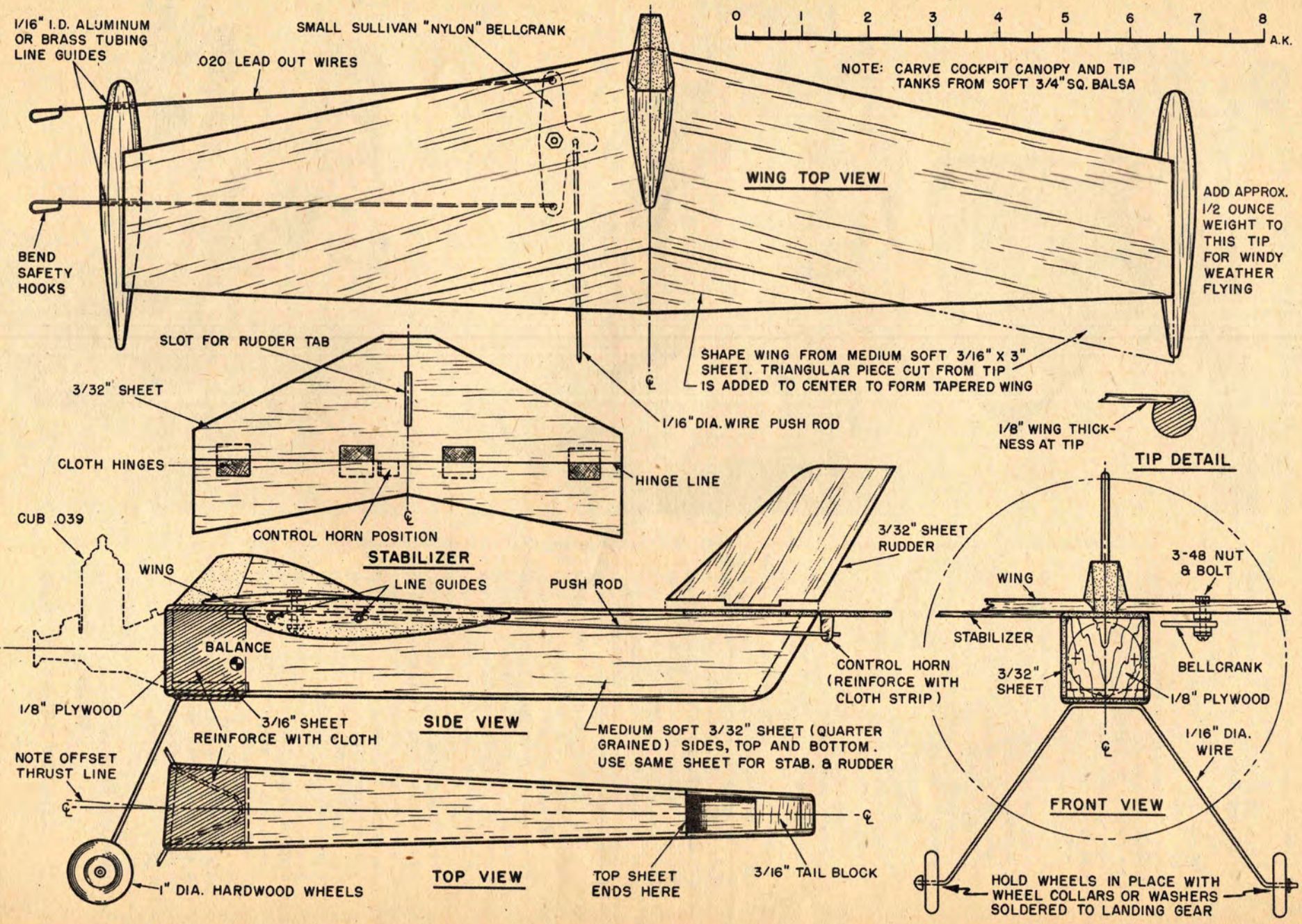
The Nationals is forming in nice shape for its first appearance on the West Coast. We can begin thinking about its location next year on the East Coast for the first time in many years. Plymouth is footing the bill for the first listing of all our members. This will be just a typed list until we can get John Dooling's plan (Crossville, Tenn.) into concrete form so that the list can be available to the various districts. We still have to work out a plan for financing the printing and distribution of the list.

The Executive Council are starting work on the much-needed change of our By-Laws. Contest Board members and vice-presidents will welcome suggestions from clubs and members. One big item is defining the duties and responsibilites of the vice-presidents as chief officers of the various districts. Must be a lot of fellows with ideas—how about passing them along?

Your president is also seeking to make every vice-president and Contest Board member a *functioning* officer. Too often in the past we have had swell fellows in office who did nothing more than be swell fellows. A recent questionnaire has shown nineteen of our thirty-three present officers are interested enough to give their views. This leaves fourteen members elected by the modelers to be accounted for.

One of the questions asked was: "If an Academy officer fails to function; to answer correspondence; to properly represent his district, should he be relieved of office?" Sixteen voted yes on this. Only one voted no. One expressed the opinion that our officers should be appointed, or at least elected by only the mature (over 21) modelers. That is the very idea I have been working against, my belief being that every member should have a voice in our affairs, should be able to nominate and elect the best brains we have in our membership.

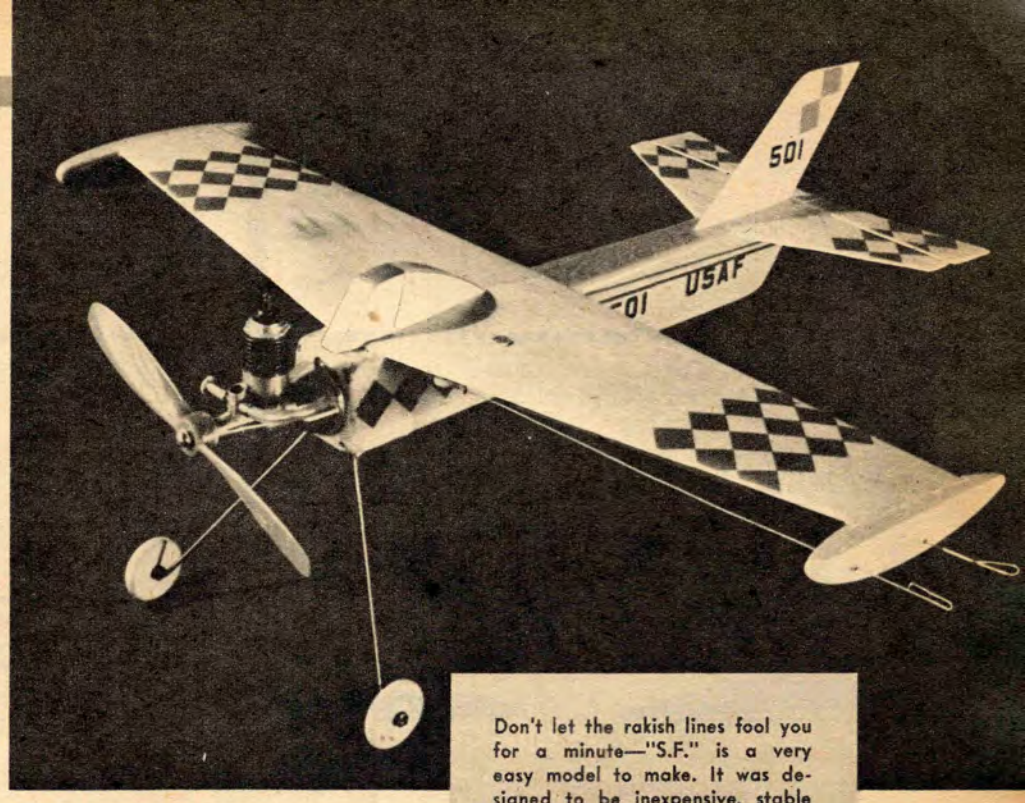
From the correspondence I have from practically every section of the country we seem to have done that, but from that same correspondence I learn that on the local level some of us are doing things that spread all the way from shortsightedness to downright vicious acts that cannot help but injure modeling generally. We have the situation in Maryland where one club in obtaining an AMA Charter has assumed that charter to give it plenary powers over all modeling in the state. In Michigan we have one club that has unleashed a broadside attack on a single sponsor on points (*Continued on page* 60)


1/16" I.D. ALUMINUM OR BRASS TUBING LINE GUIDES
SMALL SULLIVAN "NYLON" BELLCRANK
.020 LEAD OUT WIRES
0 1 2 3 4 5 6 7 8 A.K.
NOTE: CARVE COCKPIT CANOPY AND TIP TANKS FROM SOFT 3/4" SQ. BALSA
WING TOP VIEW
ADD APPROX. 1/2 OUNCE WEIGHT TO THIS TIP FOR WINDY WEATHER FLYING
BEND SAFETY HOOKS
SLOT FOR RUDDER TAB
3/32" SHEET
SHAPE WING FROM MEDIUM SOFT 3/16" X 3" SHEET. TRIANGULAR PIECE CUT FROM TIP IS ADDED TO CENTER TO FORM TAPERED WING
1/16" DIA. WIRE PUSH ROD
1/8" WING THICKNESS AT TIP
TIP DETAIL
CLOTH HINGES
HINGE LINE
CONTROL HORN POSITION
CUB .039
STABILIZER
3/32" SHEET RUDDER
WING
LINE GUIDES
PUSH ROD
3-48 NUT & BOLT
BALANCE
CONTROL HORN (REINFORCE WITH CLOTH STRIP)
STABILIZER
BELLCRANK
3/32" SHEET
1/8" PLYWOOD
1/8" PLYWOOD
3/16" SHEET REINFORCE WITH CLOTH
SIDE VIEW
MEDIUM SOFT 3/32" SHEET (QUARTER GRAINED) SIDES, TOP AND BOTTOM. USE SAME SHEET FOR STAB. & RUDDER
1/16" DIA. WIRE
NOTE OFFSET THRUST LINE
FRONT VIEW
TOP VIEW
TOP SHEET ENDS HERE
3/16" TAIL BLOCK
1" DIA. HARDWOOD WHEELS
HOLD WHEELS IN PLACE WITH WHEEL COLLARS OR WASHERS SOLDERED TO LANDING GEAR

Simple Flyman

Next logical step beyond profiles is this transitional trainer

By AUBREY "RED" KOCHMAN



Don't let the rakish lines fool you for a minute—"S.F." is a very easy model to make. It was designed to be inexpensive, stable and sharp looking. Use 30-ft. lines of Nylon thread or .010 wire to fly.

■ S.F., designed primarily for the novice builder, is not necessarily for the novice flyer. Does that sound peculiar? Well, we're thinking of those chaps who have been busy assembling and flying profile training models from prefabricated kits. If you fit into this class, a model like the Flyman is an excellent transitional trainer to the built-up fuselage jobs. It is both simple and inexpensive and may be used as a basis for any number of modifications for the young designer.

Simple Flyman should be considered a "sport" model; although capable of looping, inverted flying should not be attempted due to fuel tank limitations.

Begin construction with the fuselage by cutting a 1½" sq. from ⅛" plywood to form the firewall and a piece of balsa 3/16" x 7/16" x 1½" for the tail block. Taper the sides of these two pieces very slightly as shown in the top view. Cut the fuselage sides to shape from 3/32" quarter-grained sheet. Note that one is shorter. Cement the firewall and tail block in place between the two side sheets and add the 3/16" sheet landing gear reinforcement piece.

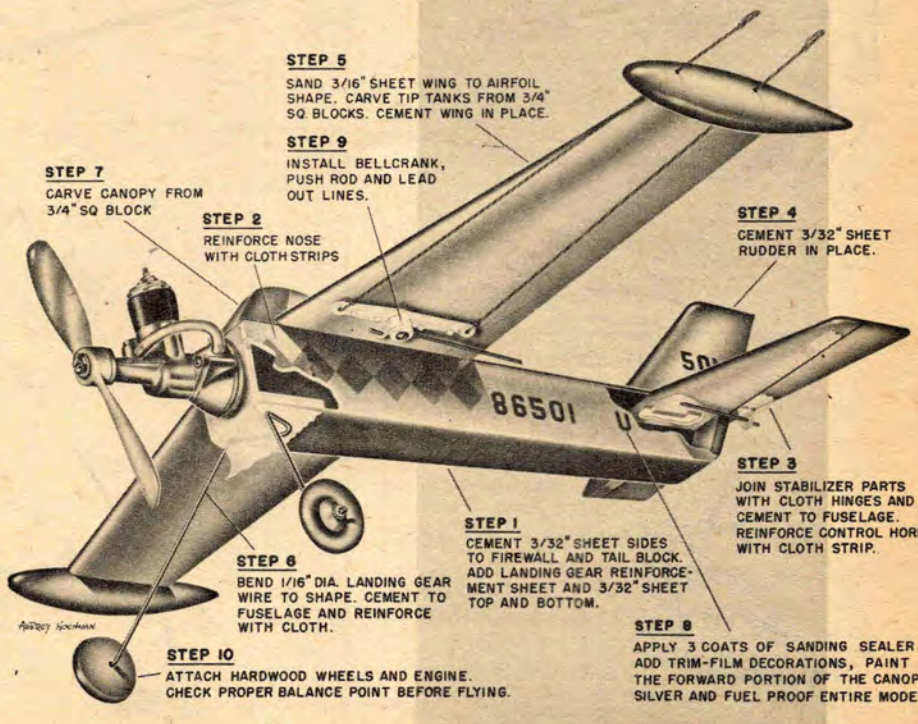
Add the top and bottom sheets. They may be cut slightly oversize and sanded flush with the sides after the cement has dried thoroughly. Round off their corners except where the wing and stabilizer join the fuselage. Reinforce the nose by cementing cloth strips from top to bottom and side to side across the face of the plywood firewall. This step is important and should not be omitted.

Cut the stabilizer parts to outline shape and hinge together with cloth strips. Cement the control horn in place and reinforce with a strip of cloth. Cement the stabilizer in position on the fuselage. Cut out and cement the rudder in place.

The wing is cut from medium soft 3/16" sheet and sanded to airfoil shape shown on the side view. Carve and sand the tip tanks from soft ¾" sq. balsa blocks and cement them to the wing tips. Cement the wing in place.

Bend the 1/16" dia. landing gear wire to shape and cement in place.

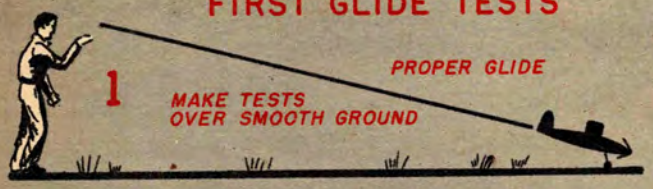
Further construction details may be found on the full-size plans available.


STEP 5
SAND 3/16" SHEET WING TO AIRFOIL SHAPE. CARVE TIP TANKS FROM 3/4" SQ. BLOCKS. CEMENT WING IN PLACE.
STEP 9
INSTALL BELLCRANK, PUSH ROD AND LEAD OUT LINES.
STEP 7
CARVE CANOPY FROM 3/4" SQ BLOCK
STEP 2
REINFORCE NOSE WITH CLOTH STRIPS
STEP 4
CEMENT 3/32" SHEET RUDDER IN PLACE.
86501
STEP 3
JOIN STABILIZER PARTS WITH CLOTH HINGES AND CEMENT TO FUSELAGE. REINFORCE CONTROL HORN WITH CLOTH STRIP.
STEP 1
CEMENT 3/32" SHEET SIDES TO FIREWALL AND TAIL BLOCK. ADD LANDING GEAR REINFORCEMENT SHEET AND 3/32" SHEET TOP AND BOTTOM.
STEP 6
BEND 1/16" DIA. LANDING GEAR WIRE TO SHAPE. CEMENT TO FUSELAGE AND REINFORCE WITH CLOTH.
STEP 8
APPLY 3 COATS OF SANDING SEALER, ADD TRIM-FILM DECORATIONS, PAINT THE FORWARD PORTION OF THE CANOPY SILVER AND FUEL PROOF ENTIRE MODEL.
STEP 10
ATTACH HARDWOOD WHEELS AND ENGINE. CHECK PROPER BALANCE POINT BEFORE FLYING.

AIR-MODEL MANUAL

The Adjustment of Rubber Powered Models

FIRST GLIDE TESTS

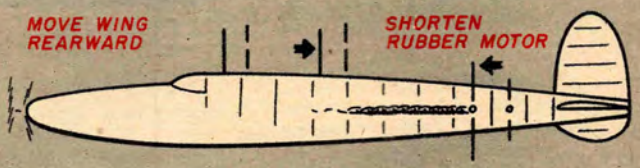


CORRECT NOSE-HEAVY TRIM BY THESE METHODS :

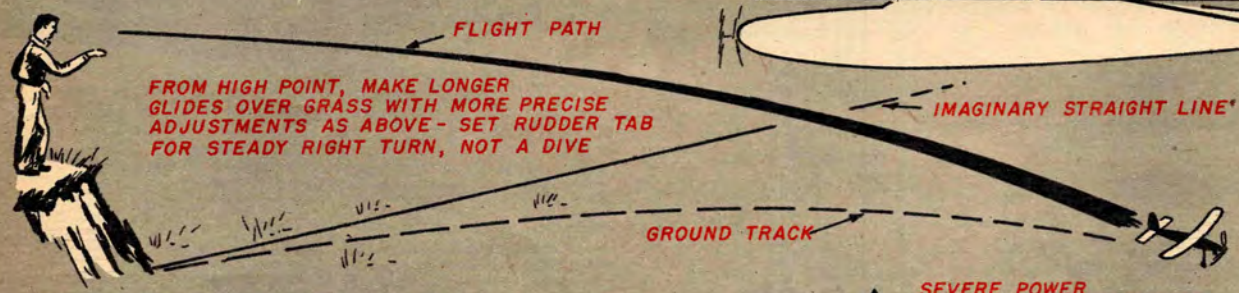
INCREASE INCIDENCE IN WING, DECREASE IN TAIL
ADD SHIMS 1/32" AT A TIME, BUILD UP GRADUALLY

CORRECT TAIL-HEAVY TRIM BY THESE METHODS :

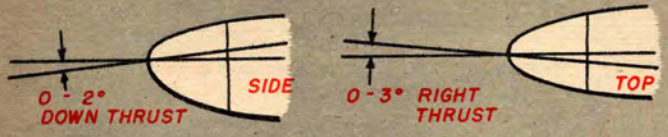
DECREASE POSITIVE INCIDENCE IN WING, DECREASE NEGATIVE INCIDENCE IN TAIL



2 LONGER GLIDES - TURNS

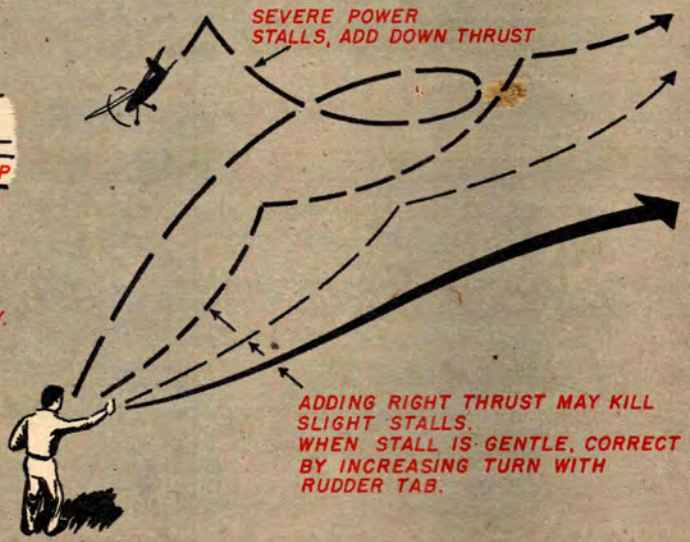

FLIGHT PATH
FROM HIGH POINT, MAKE LONGER GLIDES OVER GRASS WITH MORE PRECISE ADJUSTMENTS AS ABOVE - SET RUDDER TAB FOR STEADY RIGHT TURN, NOT A DIVE
IMAGINARY STRAIGHT LINE
GROUND TRACK

3 FIRST POWER FLIGHTS



MOST MODELS FLOWN RIGHT IN CLIMB AND GLIDE - MAKE FIRST POWER FLIGHTS OVER GRASS IN AN OPEN AREA. PICK A CALM DAY. USE WINDER, ABOUT 50 TURNS TO START.

DOWN THRUST USED TO CORRECT STALLS - RIGHT THRUST CORRECTS TORQUE AND MAKES RIGHT TURN.


SEVERE POWER STALLS, ADD DOWN THRUST
ADDING RIGHT THRUST MAY KILL SLIGHT STALLS.
WHEN STALL IS GENTLE, CORRECT BY INCREASING TURN WITH RUDDER TAB.

4 INCREASE POWER

GRADUALLY INCREASE WINDER TURNS TO CHECK CLIMB AND TURN TRIM - MAKE FURTHER ADJUSTMENTS AS BEFORE.

STRAIGHT WITH SLIGHT STALLS

MUSH WITH SLIGHT TURN

SMOOTH WITH GOOD TURN

TOO MUCH TURN

PROGRESSIVE ADDITION OF RIGHT THRUST CREATES THESE FLIGHT PATTERNS

5 GLIDE TRIM

STRAIGHT FAST GLIDE - TRIM MORE TAIL-HEAVY, THEN ADD RUDDER

POWER STOPS

DIVING TURN - LESS RUDDER, THEN TRIM MORE TAIL-HEAVY

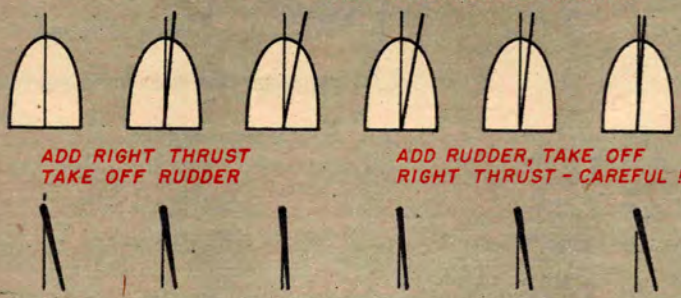
STALLING GLIDE - LESS RUDDER THEN TRIM MORE NOSE-HEAVY

WIDE TURN - ADD RUDDER THEN TRIM MORE TAIL-HEAVY

REMEMBER: MORE TURN INCREASES NOSE-HEAVINESS
LESS TURN INCREASES TAIL-HEAVINESS

6 FINAL TRIM

USE SIDE THRUST AND RUDDER TRIM TOGETHER AS SHOWN:

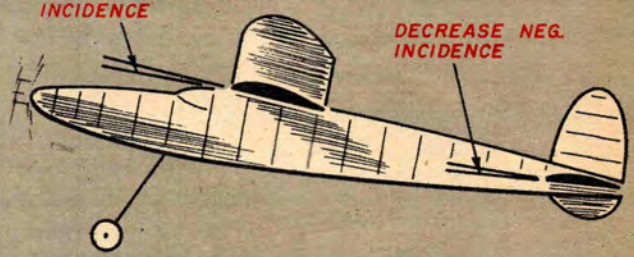


ADD RIGHT THRUST TAKE OFF RUDDER

ADD RUDDER, TAKE OFF RIGHT THRUST - CAREFUL!

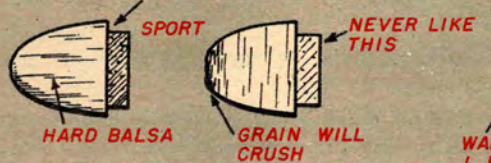
7 WIND

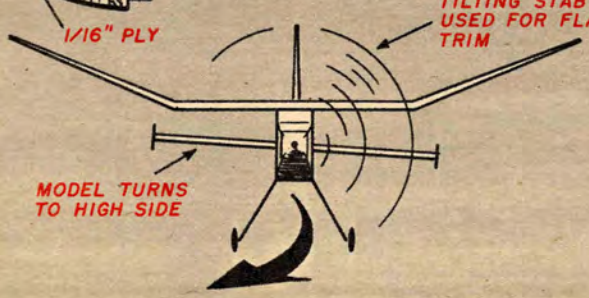
WINDY WEATHER STALL WILL REQUIRE MORE NOSE-HEAVY TRIM THAN NORMALLY

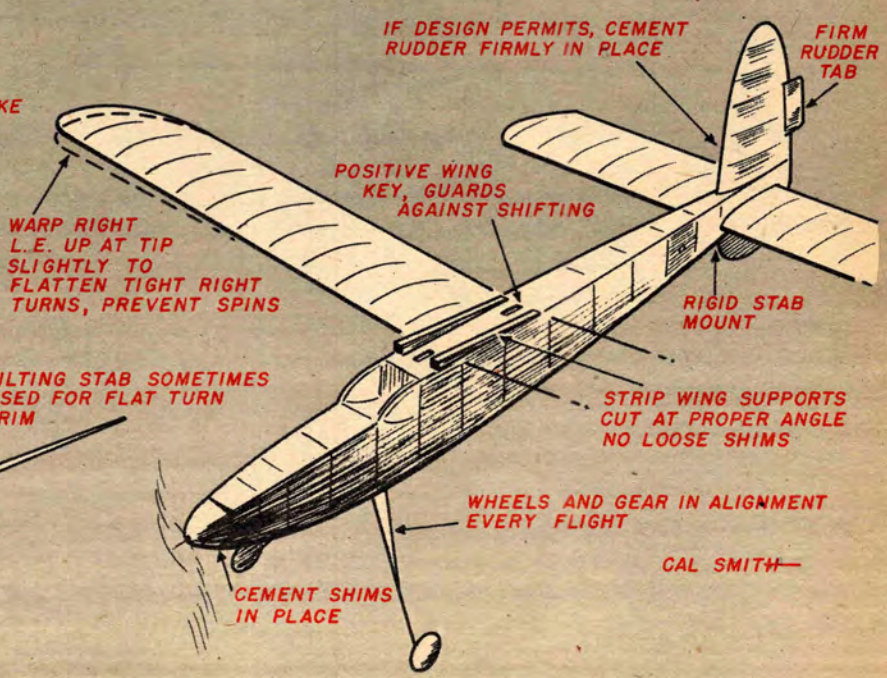


8 MODEL FEATURES

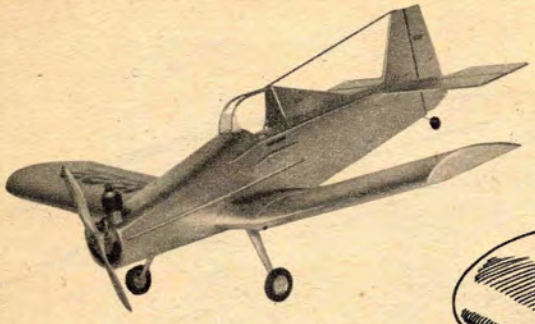
BUILD NOSEBLOCKS LIKE THIS -



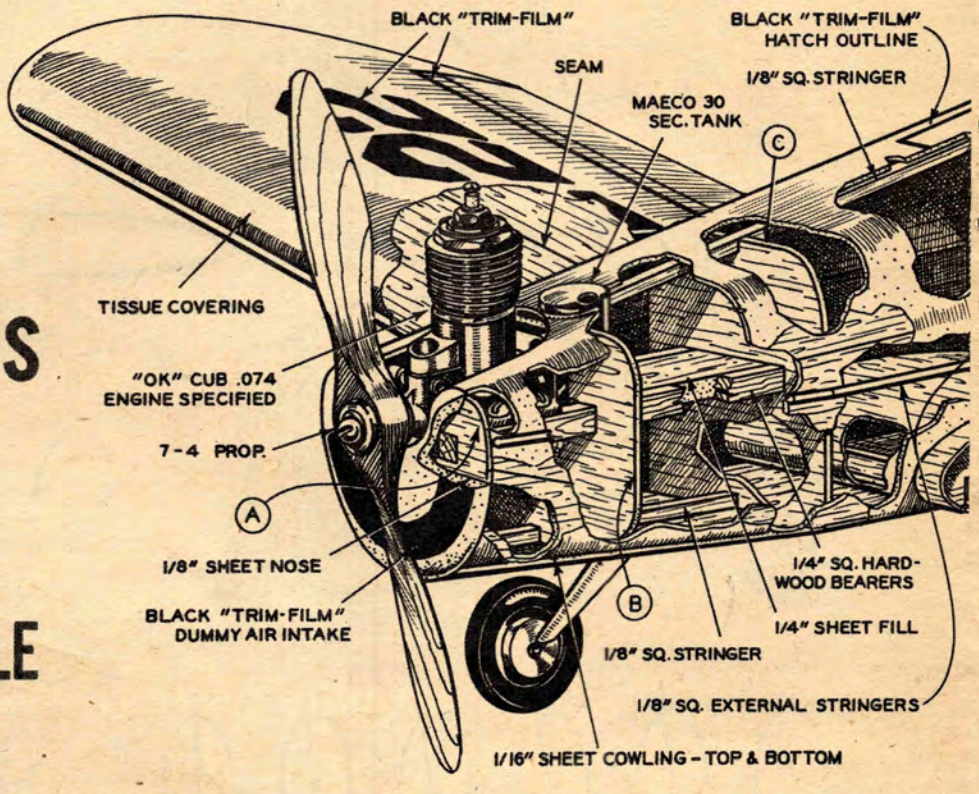



IF DESIGN PERMITS, CEMENT RUDDER FIRMLY IN PLACE
FIRM RUDDER TAB
WARP RIGHT L.E. UP AT TIP SLIGHTLY TO FLATTEN TIGHT RIGHT TURNS, PREVENT SPINS
POSITIVE WING KEY, GUARDS AGAINST SHIFTING
RIGID STAB MOUNT
STRIP WING SUPPORTS CUT AT PROPER ANGLE NO LOOSE SHIMS
WHEELS AND GEAR IN ALIGNMENT EVERY FLIGHT
CEMENT SHIMS IN PLACE

CAL SMITH



Texas A & M's AG-1 FREE FLIGHT SCALE



An aluminum-bender's classic, this crop duster makes a fine F/F scale; you see it for U/C too, no?

■ Realizing the need for a good crop-dusting plane, Texas A & M Aircraft Research Center designed the Ag-1. The airplane's sole purpose is dusting, spraying, seeding, and fertilizing.

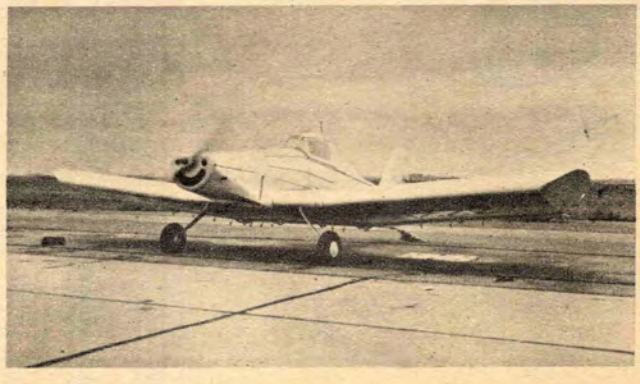
The craft was constructed under a C.A.A. contract. The project had the benefit of personnel assigned for various periods by C.A.A., the Department of Agriculture, two airplane manufacturers, and the Texas A & M College System; many important parts including the engine, propeller, landing gear, and seat were contributed by their manufacturers.

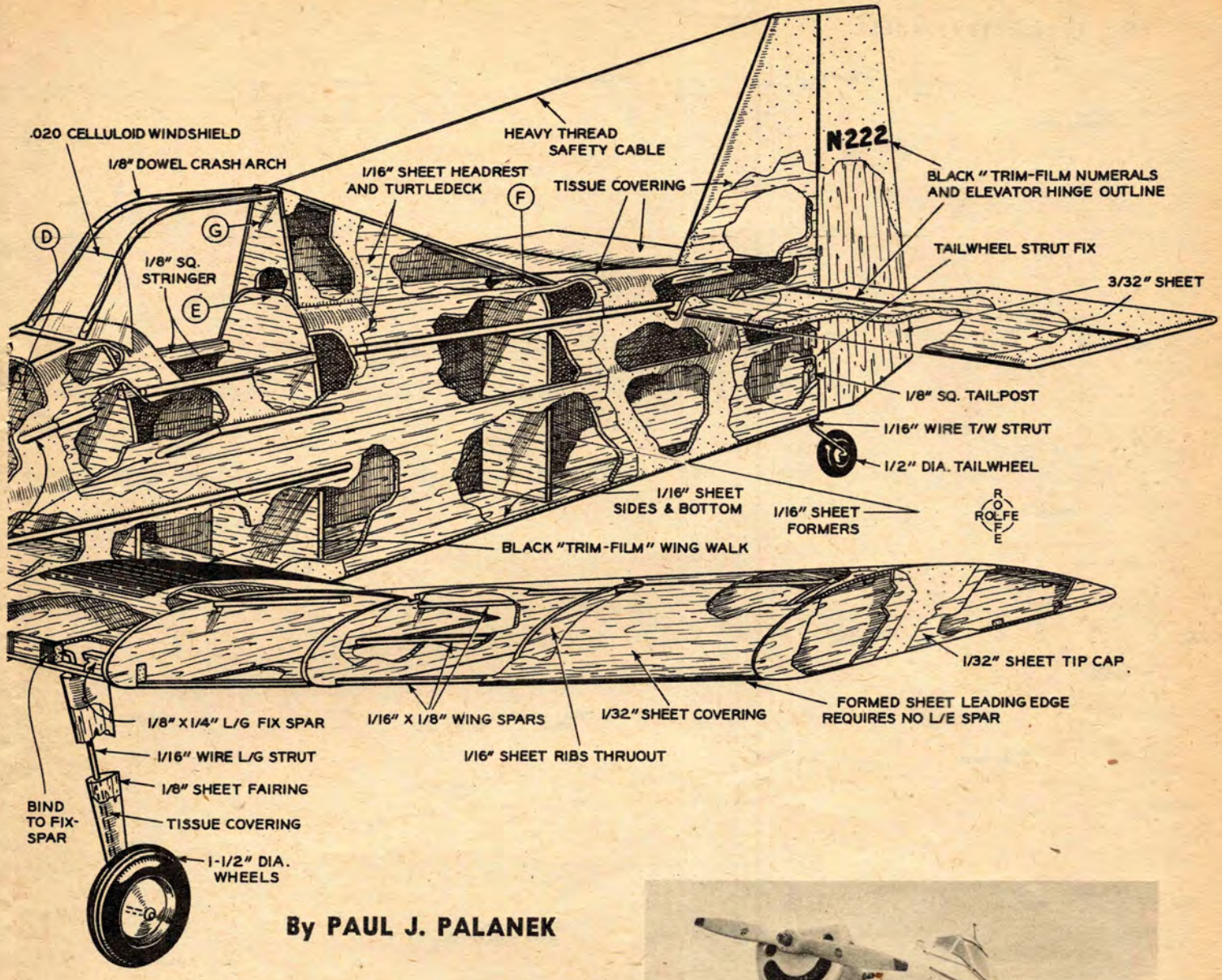
Estimated performance of the airplane under full load conditions is unusual; maximum speed, 115 mph; cruising, 100 mph; operating speeds, 60 to 90 mph; landing, 45 mph (normal landing without pay load, 37 mph); rate of climb, 600 feet per minute; service ceiling, 12,000 feet; cruising range, 400 miles; and take-off distance to a height of 50 feet, 1300 feet.

Full span slotted flaps and slot-lip ailerons give ultra-maneuverability which is required for its given

THE MODEL ▶

THE AIRPLANE ▶



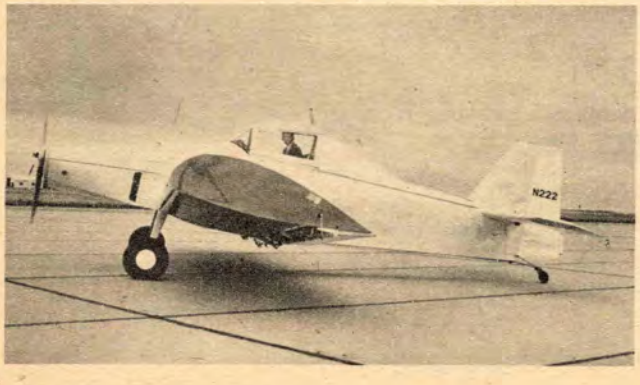


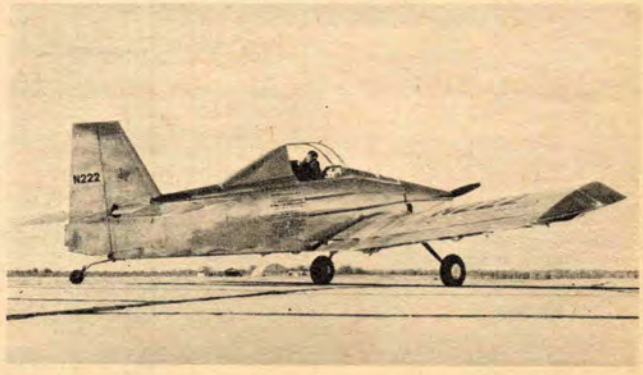
By PAUL J. PALANEK

work. We thank Mr. Fred E. Weick and his staff at Texas A & M for their technical assistance in the preparation of the model, which is a direct copy of the original with little modification except where needed for free flight. All of the model's surfaces are sheet balsa covered, which not only adds realism, but strength for rough landings.

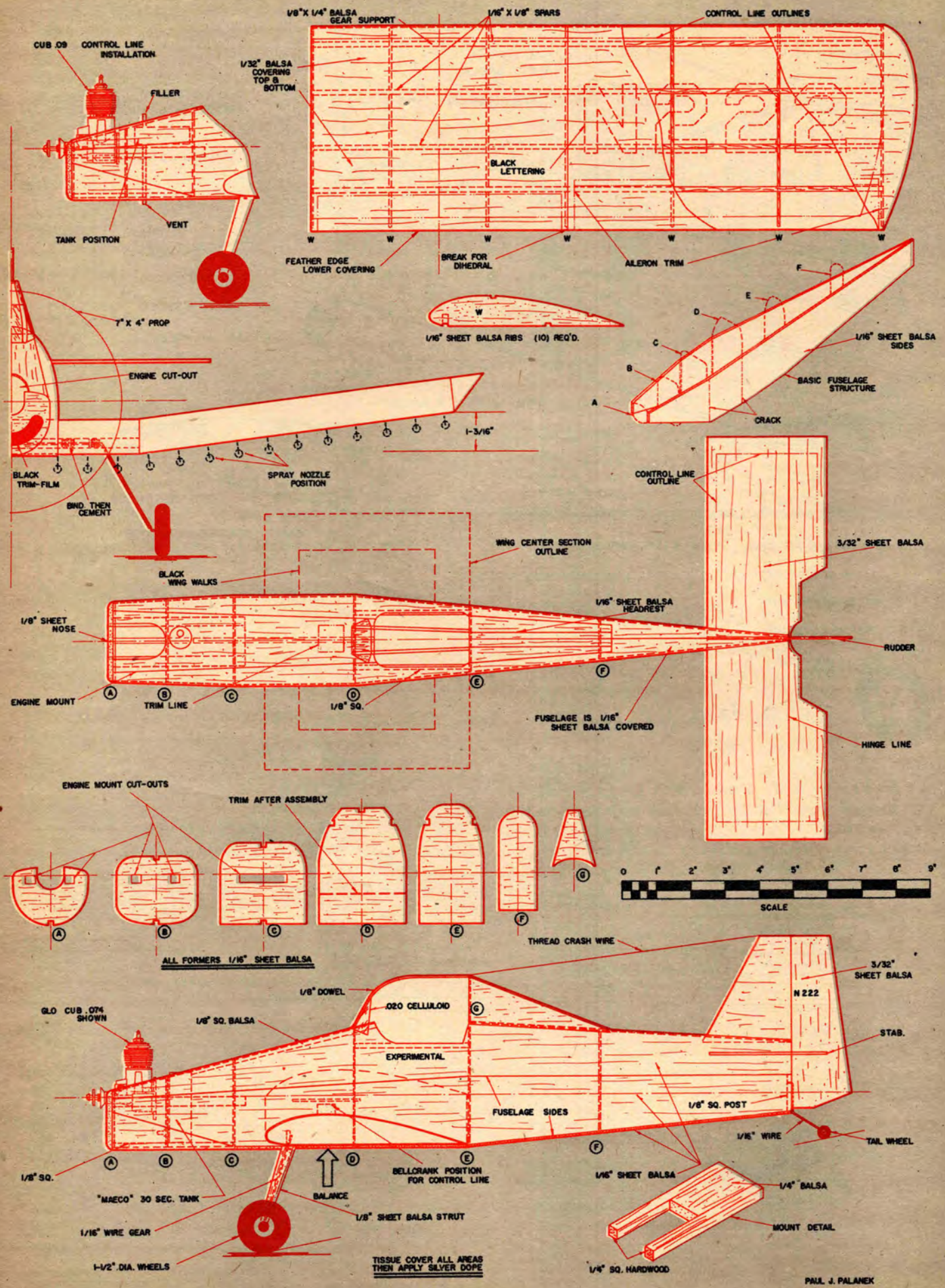
We were very pleased with the performance of the model Ag-1. The Cub .074 proved perfect for all purpose flying. Building data on full-size plans.

These Levy & Shipp photos show successive stages of the Ag-1. First there was a crash arch above the cockpit and down-slanting wing tips (photo below). Then tips were slanted upwards and outwards for polyhedral effect. Latest change was in cockpit canopy for shade.

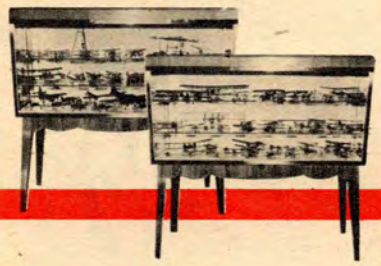




AQ-1 FREE FLIGHT SCALE



Top row, from left: Santa Clara glider by Prof. J. Montgomery, 1905; Ellenhammer of Denmark flew this in '04; successful flying model by Frenchmen Tatin and Richet, 1890; "flapper" in which Belgian Vincent de Groof was killed (1874) released from balloon; Chanute's glider. Center row: Santos Dumont's Demoiselle; Fokker's first, the Spider; Trajan Vuia's 1906 successful French design; Hans Grade (Germany) 1909 job flew for 55 min. Bottom row: Wright Model B; improved B, 30 hp engine; Wright C, pontoon by Navy.

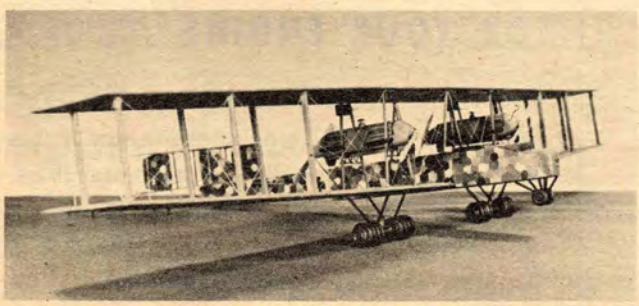


Quarter Scale Collection

Late in 1950, Parks College of Saint Louis University (formerly Parks Air College), now celebrating its 25th anniversary, was given one of the finest collections of model aircraft in existence today. The gift of Mr. and Mrs. Charles M. Williams, it contains 120 scale models tracing the history of flight during the past one hundred years. Included are ten Wright planes and a scale replica of the launching tower with the falling weight used to assist in catapulting the early underpowered aircraft. Also in the collection are a number of models of aircraft built before the turn of the century when flight consisted mainly of man's dreams.

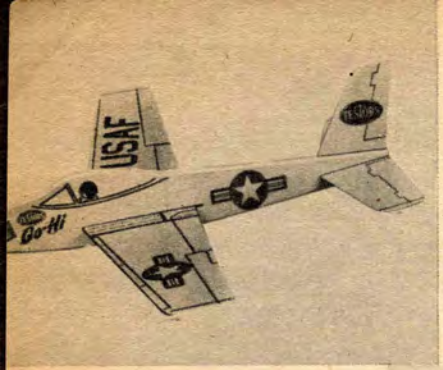
Sir Hiram Maxim's Enormity, built after U. S. inventor moved to England. Steam engine; tethered on circular track; flew; crashed.

Caproni C.A.-4 bomber. Italians used this tripe for night bombing in WWI. Three Libertys; 98 mph. Bombs under lower wing.



Giant Zeppelin bomber, built by German AF, was one of largest aircraft of WWI. Had four 300 hp Maybach engines; crew of 6.

British Handley-Page of WWI. Had two Liberty engines of 400 hp each; 97 mph. Span 100 ft.; weighed 14,000 lbs. fully loaded.



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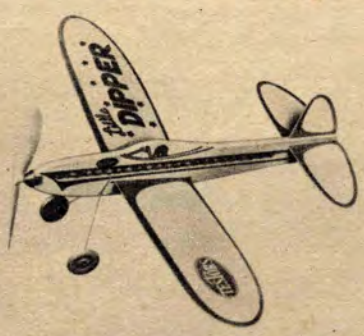

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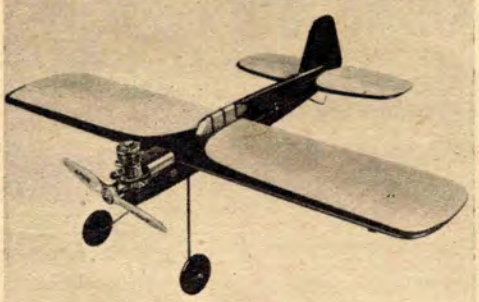

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5th MILESTONE MODEL
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6th MILESTONE MODEL
Control-Line Super Stunt
SENIOR "9"—"19"—"29"*
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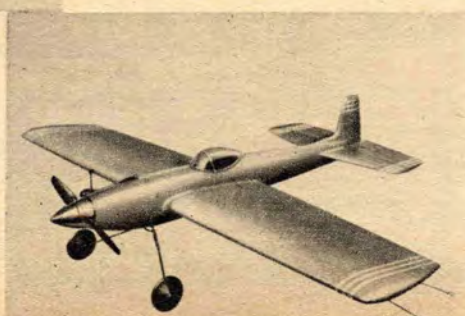

DO YOU KNOW THAT YOU CAN MAKE FILLETS WITH TESTORS MODEL AIRPLANE CEMENT?

This is a very good—and very easy—way to reinforce a cemented joint. First: squeeze a heavy string of cement along the entire length of the joint. Then, even it out *at once* with several quick strokes of your finger, working pretty fast. Don't press too hard when you do this. Allow the cement to form a smooth fillet without attempting to force it *into* the joint. Be sure not to let it spread too far and wipe off all excess cement immediately.

Preferably, the cement should be rather fresh. If the tube has been used several times before and the contents are a bit stiff, moisten your finger with TESTORS ACETONE before you start forming the fillet.

You will find this technique neat and effective for making very strong joints. Wherever applicable, it is recommended for all general assembly work. However, don't attempt to make *large fillets* in this manner except in case of emergency. TESTORS FYLL has been specially formulated for this purpose, and does a very good job. Nevertheless, if you do want a large cement fillet, make several applications and allow ample dry time between each of them. This caution is necessary, because — although TESTORS MODEL AIRPLANE CEMENT dries fast — it does so only when applied in normal quantities.

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NEW

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Build Your Own FLYING SAUCER

By ROY L. CLOUGH, JR.

Unretouched flight shots.

■ She flies through the air with the greatest of ease, transition from powered flight to glide is smooth, the glide itself is slow and the let-down gentle. It is spinproof and one of the most stall-resistant models ever built, yet when forced into a stall it recovers cleanly without the violent oscillations usually associated with "tail-less" types.

It has been observed many times to climb steadily at a 45 deg. angle into a stiff breeze, yet it may be trimmed for straightaway speed dashes at a surprising clip with the little Infant powerplant.

We can hear the free flight fans: "How can that thing possibly fly? It has nothing suggestive of dihedral—what keeps it from rolling over?" Or, "We've tried these generally-delta type models before—fine as long as a gust doesn't upset them, but everybody is familiar with the stall and endless dive characteristics produced by longitudinally disposed lifting surfaces. And how can you rig a thing like that to climb under power, yet still glide nicely—with a symmetrical section, yet!"

This model has the answers. Behind it lie a dozen experimental saucer-deltas, both free flight and control line, several bent crankshafts and at least one broken crankcase.

Worries about surface warpage are a thing of the past; the model is one unit, you build it, you cover it, and there she is, all ready to go. Nothing to twist out of shape, nothing that must be assembled "just so" every time it is to be flown. In addition to this the model is extremely difficult to smash up, and lastly, if it lands in a tree it will usually slip down through the branches to the ground without hanging up. That's not a strictly aeronautical consideration, to be sure, but a rather endearing characteristic to those who must do their flying near wooded areas.

Some background: A number of experiments with gliders, prior to powered flight attempts, fixed the ideal aspect ratio at the three-quarter mark. That aspect ratio of .75*

*Non-rectangular aspect ratio determined by formula: $\frac{\text{Span}^2}{\text{Total lift area}} = A/R$

seemed about right. At higher figures longitudinal stability began to suffer, and as the length, or chord was increased producing an AR of less than .75, lift began to drop very rapidly, plus introducing an oscillating stall from side to side in a nose-up condition at low speeds.

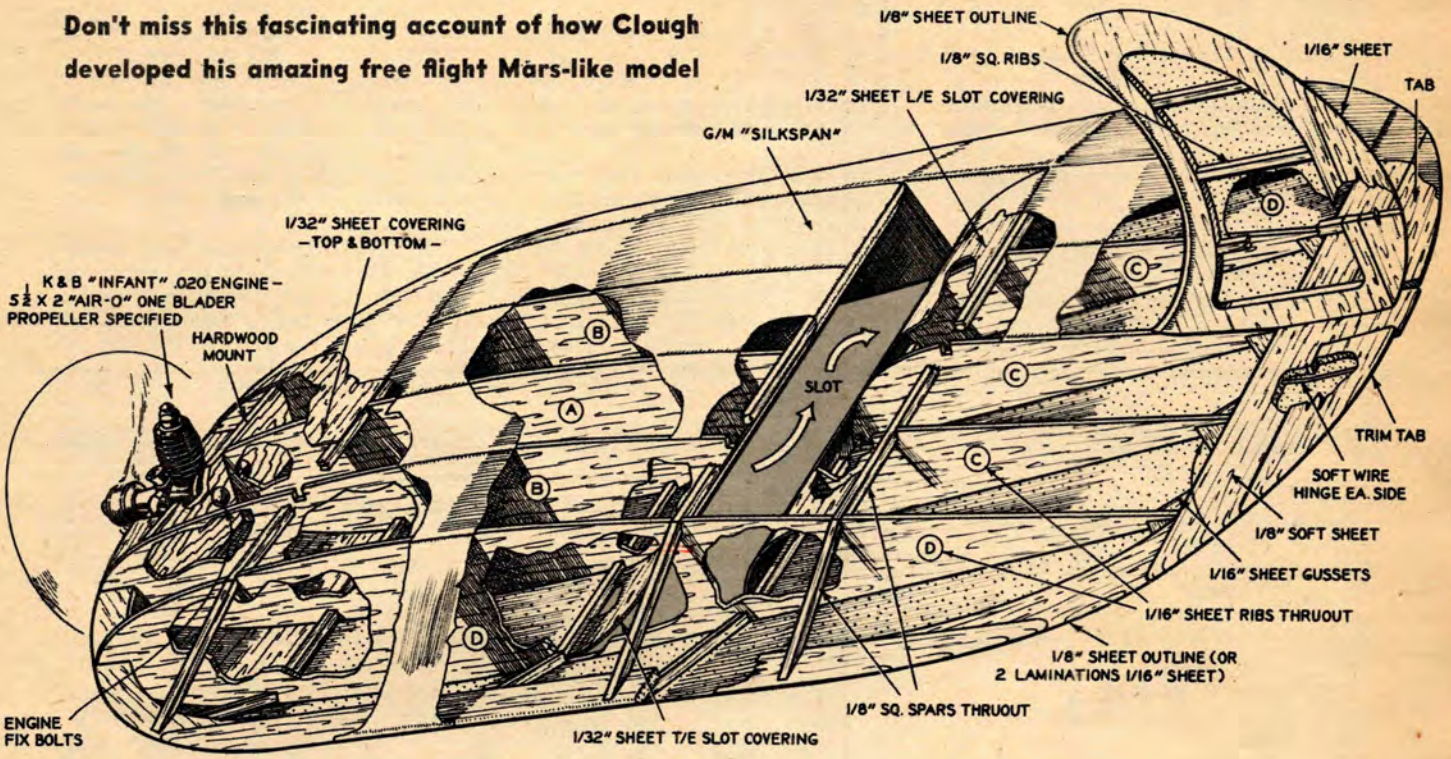
It was found that the airfoil section had to be practically symmetrical if optimum performance and efficiency were desired. The reason for this is that strongly reflexed sections produced as much drag, in a practical sense, as the tail they were supposed to eliminate. In the .75 configuration another factor—short span—prevented any effective root-tip incidence variation, and it was felt that it would also introduce lateral instability, particularly since the machine would have no dihedral angle in the usual sense.

By experience with symmetrical sections on other, conventional free flight models, it had been found that the lift of such a section is quite adequate, possibly because of a lower drag factor, quite as high as some of the highly touted undercamber wings, provided they are operated at the proper angle of attack.

This may surprise some model designers who feel that a symmetrical, or full streamline section is a "no lift" section. That this isn't true becomes evident when one considers they are operated at a high angle of attack. We have the empirical evidence of control-line stunt models using such sections which invariably out-glide and out-perform even right-side-up maneuvers by top cambered wing types.

In addition to this I had been flying a sport free flighter of 40" span and full symmetrical foil for six months with excellent results (I predict there will be a swing toward symmetrical sections on free flight when their many advantages—particularly their insensitivity to power fluctuations—become better known). Thus the symmetrical section was decided upon. It had the lift, it had very low drag, it would permit high speeds or high climbs, and it greatly simplified construction problems and made for good geometric design bal-

Don't miss this fascinating account of how Clough developed his amazing free flight Mars-like model



ance and straightforward building.

This was fine. But it also had a zero pitching moment, which, while assuring fine neutral stability, unfortunately assured as well a near-zero ability to recover from a longitudinal displacement. We struggled with this one through several early designs. They flew well, steadily and fast, with no tendency to stall by their own devices—yet sooner or later a gust would account for them, force them up into a stall, and that particular model would end its career in a screaming dive to the ground.

Attempts to provide a recovery couple seemed always to clutter up the design with auxiliary stabilizing surfaces (similar to the "safety" stab used on some of the British delta-wing jets) or pointed back toward reflex surfaces. During this time it was established also that there had to be a considerable amount of area up forward. This was necessary to prevent sidewise tumbling (I believe this is a sort of rapid span-wise rather than chord-wise stall) and this pointed directly to the "Flying Platter" configuration. Here the sweep-back was more gentle, yet still enough to take over the functions usually performed by dihedral angle.

At this point the use of slots was tried. It was found that slots would not prevent a stall, but would increase the angle before it broke. A few more experiments established that careful placing of the slot would result in a slight recovery couple from a dive, since the top side of the wing, favored by the slot, would generate more lift in a sudden acceleration. However, the recovery took far too long and secondary stalls frequently developed.

The leading-edge slot was not the answer, or, if it was, it had to be movable proportionately to the dynamic pressure. Frankly, I could not see this for models. The engine vibration factor is much too high, the scale effects are much too rugged; it would be a practical impossibility to design a floating slot which could withstand vibration, yet be light enough to operate without absorbing the advantages of its use in added weight and complication. This led to paper cut-out gliders weighted with pins and slotted in some rather improbable places; at the center, around the rim, and finally at a point about one-third forward from the trailing edge. This looked good and as a result more gliders were cut out and the location of the slot nailed down, its present position being fixed empirically.

And it works.

The recovery from a forced stall is clean. Yet the model will not stall of itself. What has been done, in effect, is to build in a tail surface, but with a difference; this one operates to raise the tail when the model is flown at a high angle of attack, yet it will also raise the nose when flown (in the glide, usually) at negative angles. At flat angles it does not bring on a loop or dive.

Construction is very simple. Make up the ⅛" balsa outline, or, if you prefer, laminate it from 1/16" sheet. The ribs offer no difficulty, ⅛" sq. spars maintain the alignment. The motor mount is simply a piece of pine or plywood. The slot section and the leading edge of the Saucer are covered with 1/32" sheet, although you may wish to use 1/16" on the bottom front section for additional ruggedness since the Saucer has no landing gear. The rudder must be put on square and true and the trim flaps are cut into the trailing edge of the model after it is finished. Cover and finish with fuelproof dope.

The C.G. location should be within a half inch or so of the location shown on the plan; not very critical, since the tabs can be used for minor corrections. Make sure the motor is mounted accurately with *no* up-

thrust; a faint downthrust is permissible but not needed, generally speaking.

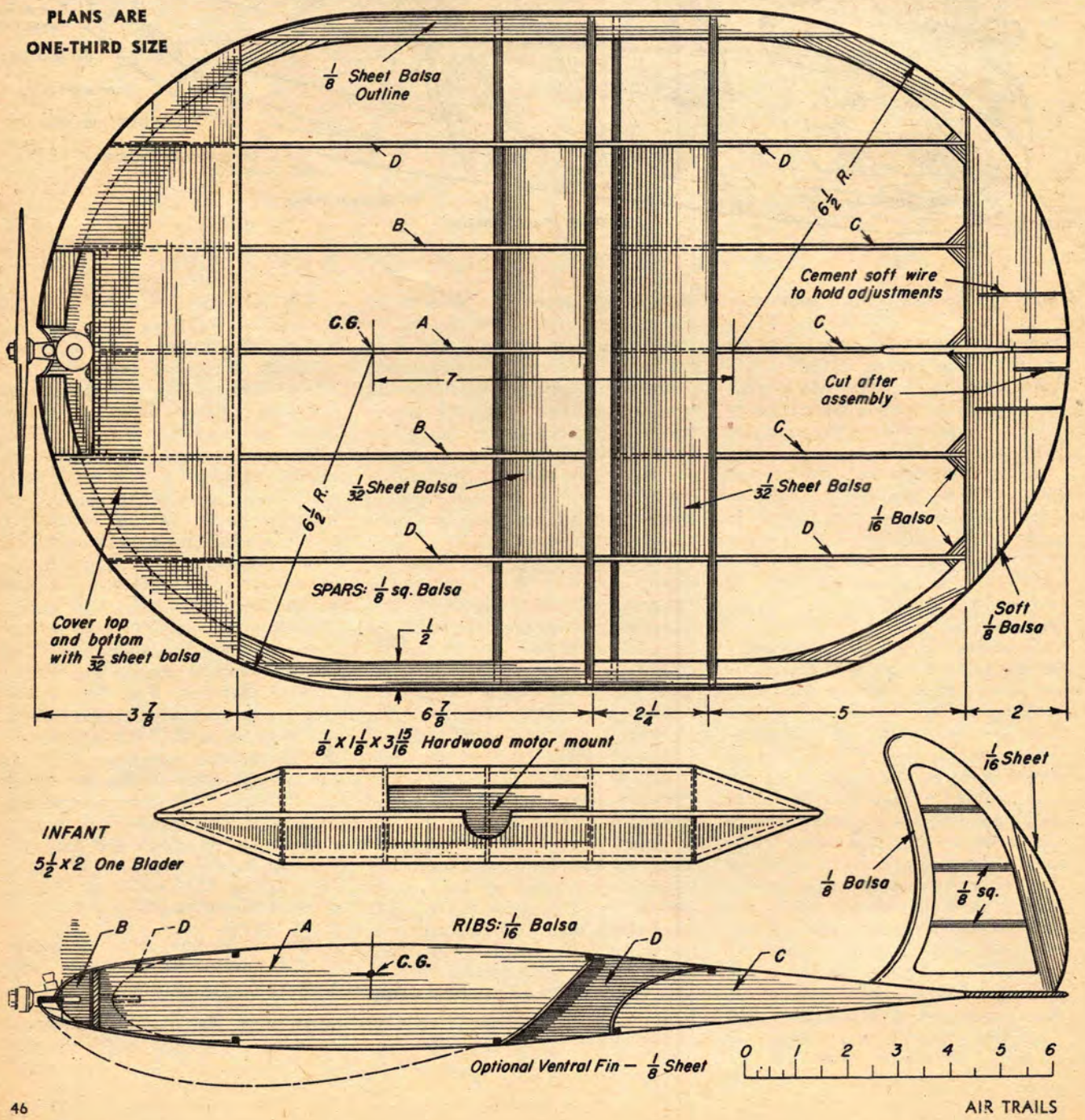
Test-glide over tall grass with a loop of solder replacing the prop. (Use a one-blader set to stop blade up, for flying.) If the model is true and balances correctly a level shove should take it out in a smooth flat glide. If it dives a bit use a touch of tab to bring the nose up. If it stalls—by this I mean if it oscillates from side to side as it goes forward—then it is tail heavy enough to require a bit of ballast up forward. No real zoom and plunge stall can develop in test gliding unless you shove it nose-high with practically no speed at all.

Now for powered flight adjustments: Several are possible. It depends upon what you want. Note that in the photos no central fin is shown, although there is one on the plan.

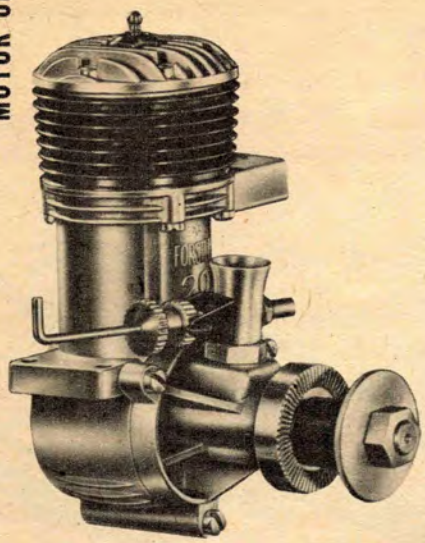
You will not need this fin for straightaway flights; in fact, lowering the CLA by the use of this fin is not at all desirable if high directional stability is desired. On the other hand, if you want tight circles, the fin should be used.

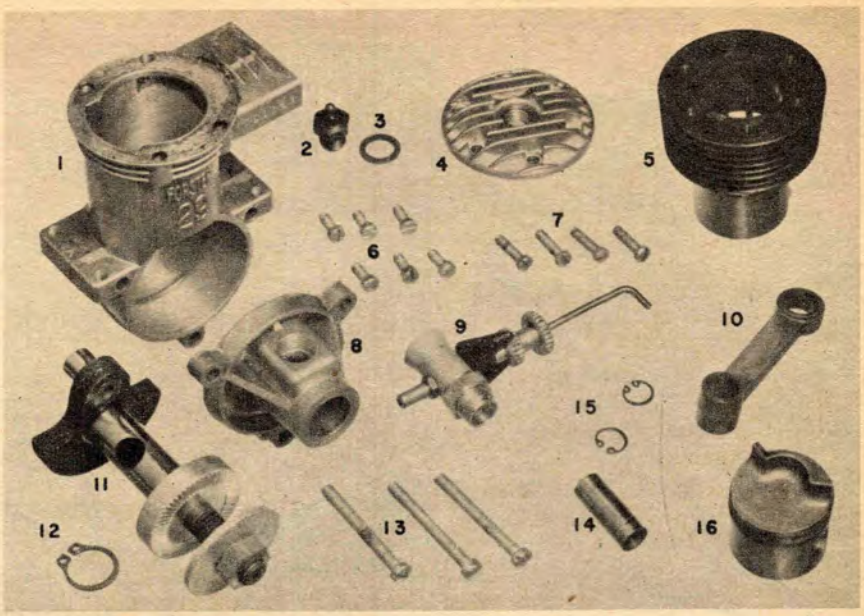
The original model would fly straight out, or in 150-foot left-hand circles without the fin and without spiraling in on rudder tab alone. However, tightening up the circle, either right or left will result in a descending spiral unless the ventral fin is used, or, alternatively, the model trimmed excessively tail-heavy. Offsetting the thrust line to the left with the rudder set right produces safe tight circles and a good flight pattern.

For speed dashes use just enough right rudder to counteract torque roll and shim in a little downthrust to prevent the model from climbing, and of course, don't use the fin. All flights are H/L.



MOTOR OF THE MONTH





Forster's F-29 & F-31

Model enginedom's most famous Brothers present a new pair of powerplants especially suited for stunt

■ The introduction of high-powered glow plug engines has created a problem in balancing model airplanes due to their light weight as shown by the trend toward long nose moments in stunt designs. Better balance can be built into a model by moving the firewall, fuel tank and landing gear forward.

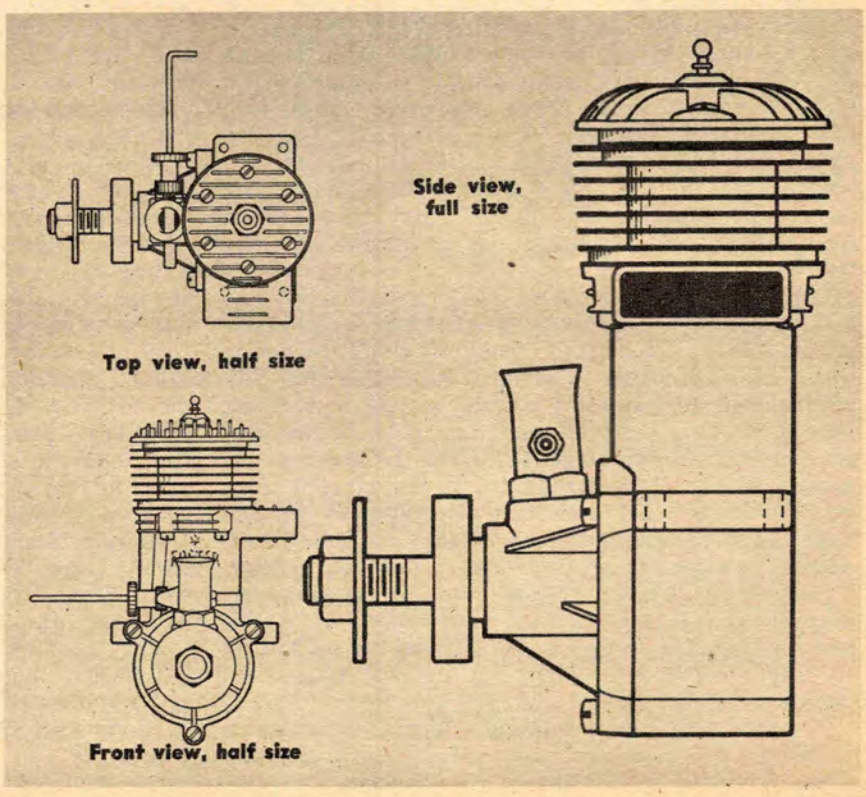
Forster's new F-29 and F-31 engines with a front rotary valve are very short and are well suited to this type of design. They also feature an adjustable needle valve that can be swung to any angle to give plenty of finger clearance behind the propeller. High compression and a new carburetor give worthwhile fuel economy.

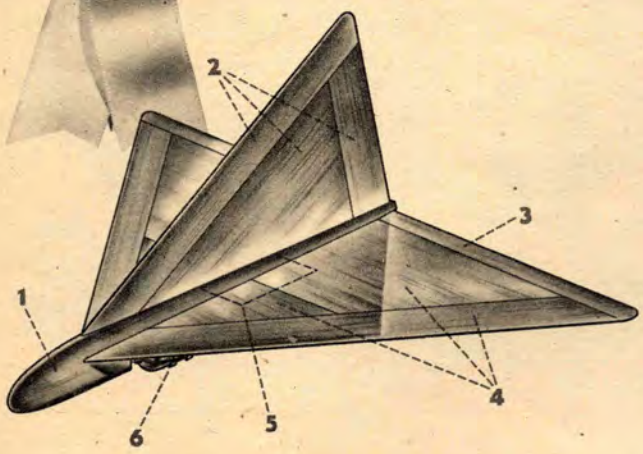
Design features and performance make the new Forster engines good all-around powerplants. Stunt modelers will be pleased with the short mounting space required, the light weight with plenty of power, and a good fuel level test for steady running.

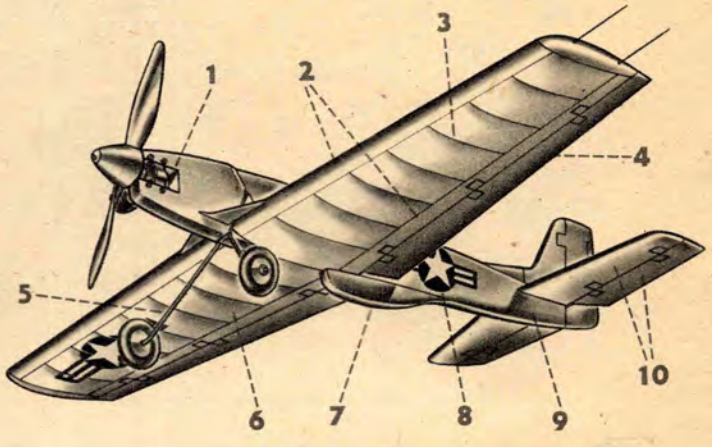
The same features are also valuable in flying scale and free flight. Easy starting while hot should make a hit with team racing fans. This results from a good compression seal and the new carburetor. The F-29 also gives good performance at high rpm as indicated by the 18,000 rpm under Engine Data.

This compares favorably with the factory tests which gave 11,400 rpm with a 9/6 Rite-Pitch, 14,200 with a 7/9 Tornado and 15,000 on the nose with an 8/5 Flo-Torque. The factory reports that it used a fuel mixture of 3 parts methanol alcohol, 3 parts nitro methane and 2 parts castor oil in conducting its several bench tests.

General construction is similar to the Forster G-29. There are less fins on the cylinder head, resulting in a high head temperature and better ignition. The aluminum piston carries two cast-iron rings and operates in a honed steel cylinder. Spring steel snap rings center the wrist pin. A hard bronze bushing is used for the main bearing and is honed to a perfect fit. The connecting rod also has a bronze bushing. The crankshaft is hardened and ground on the main bearing and crankpin. Some engines use a shaft that is heat treated before machining and these are apt to (*Continued on page* 64)







Telasco's Delta

Jetex-powered job's a cinch to make

■ The supersonic planes are in the news these days, so it is only natural that model builders should want to try them too. Now they can, for a kit by American Telasco Ltd., New York 36, builds up into a hot little jet-powered delta wing job. It is intended for Jetex 50 power, and sells for 60¢.

The design is very simple, and it should be possible to have the model in the air in a relatively short time. The finished plane looks like a deluxe version of those paper darts we used to fly in school, except that the fin is on top, and, of course, the potent little Jetex engine furnishes the push.

Wingspan is 8¾" and the length is 7¾". The weight will be about ¾ oz., complete with engine but no fuel. The wings are perfectly flat, so there is no airfoil section to worry about. But you must be sure they *are* flat, for this is a high-speed job.

All wing (4) and fin (2) parts are die-cut of 1/16" balsa, while the fuselage is fairly hard ⅛". The kit includes a mounting clip for the Jetex, with screws for fastening (6). There is an adjustable elevator trim strip (3).

For the best performance, weight should be kept to a minimum. This means as little dope as possible. If you want to color up the model, it would be better to use stain or dyes. A strip of aluminum foil (5) is furnished, to insulate the fuselage just behind the jet outlet. This keeps sparks from marking the die-cut balsa profile fuselage (1). The Jetex does not shoot out any fire, of course, but the igniting fuse sparkles quite a bit, and then of course, we always have the careless operator who lights the fuse with a match (a cigarette or fireworks "punk" is better).

Incidentally, a single coat of "water glass" obtained from the drug store does a fine fireproofing job. Apply it to the balsa for an inch or two around the jet orifice, on both wing and fuselage; put the water glass on before you dope the wood.

The model is launched almost level, but as speed is gained, the nose will rise till the ship is going almost straight up. Turns to right or left are easy to achieve by bending wing and fin trailing edges.

Sterling Performer

Semi-scale combat F-51 from Philly

■ As was to be expected, Sterling Models, Philadelphia 22, Pa., has continued to expand its line of planes designed primarily for performance. Latest members of the new line are in the scale groove, however, for they are designed to look as much like the big planes they copy as possible, yet retain the top performance for which they are intended.

Our Sterling design this month is the F-51 Mustang; the famed old fighter has been made into a profile job that is surprisingly realistic within the limits imposed by this form of construction. As usual, this scale-minded concern has gone to considerable lengths to produce as authentic a model as possible—the fuselage profile is an exact scale copy of the big ship, having been taken from factory drawings. Profile radiator and canopy (7) are die-cut.

This fuselage (9) is unusual in another way; it is a die-cut piece, this despite the fact that it is made from a firm grade of balsa a full 9/16" thick! Plywood nose side pieces (1) afford added strength and a solid base for attaching the horizontally mounted engine.

The kit includes a bent landing gear piece (5), though the ship will naturally be a hotter combat stunter without any gear.

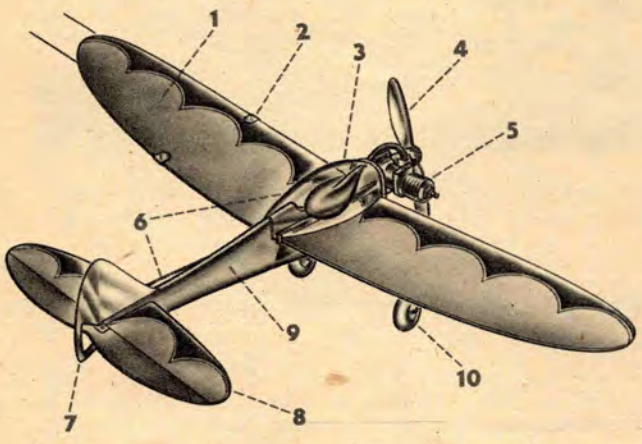
Wing leading and trailing edges (2) are completely shaped and notched for the ribs; the latter (3) are die-cut and tips are shaped. Wing is paper covered (6). The plane is designed to use wing flaps linked to the elevators (4). Cloth hinge material is used for these flaps and for the flippers. The tail group (10) is die-cut balsa.

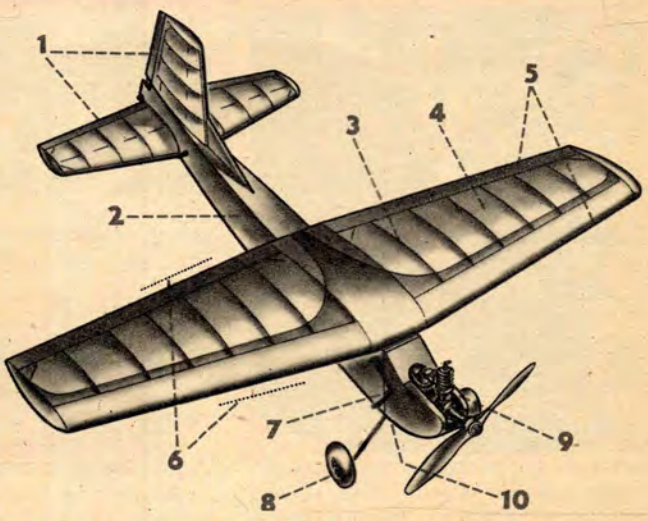
Another design of Matt Kania, this F-51 is intended for A, B and C engines. With a K&B 29, it weighs about 22 oz. The wing area is 320 sq. in. and the span 38 in., giving a loading of 10 oz. per square foot.

Very detailed instructions and carefully thought-out design should make building a fast, easy task. Colored decals (8) are furnished.

Along with the Mustang, Sterling is producing a Yak-9, so you can have realistic sky battles with ships which have actually opposed each other in the skies over Korea.

RIBBON MODELS





Supercharged Firebaby

Walker adds oomph to his small r-t-f

■ For some months now, Jim Walker's ready-to-fly Firebaby has been sold with or without engine. You could get it with several different powerplants of the .049 class. Now something new has been added; the plane comes with a Royal Spitfire engine. This is no standard engine, though, for it has been "supercharged" by A-J Aircraft Co., Portland 17, Ore.

From a cursory outside examination the engine looks like the standard variety—it is apparent that the changes are internal. At any rate, Jim assures us that this engine will turn up several hundred rpm faster than the ones you can buy in the store. The main advantages of the alterations, however, are that the engine is easier to start, and the carburetion is much more uniform. The latter is especially important, for carburetion will remain uniform at all flight attitudes and at different speeds.

Span is 19 in., weight with motor is about 3 oz., and the model is complete with control lines, handle, and even an adjustable-pitch prop. Without motor it costs $2.50, and with the .049 engines you can take it home for $7.50; the Supercharged Royal Spit version will sell for $8.95.

Indicative of Walker's constant research, not only on the actual planes he sells, but on their powerplants, is the little envelope of extra glow plug washers that come with $7.50 model and engine combos. These washers are not for use if you should lose the one on the engine; they are to be put on the plug in addition to the one already there.

The idea is that many new engines tend to be balky and hard to start. The added washers lower the compression and make the engine lots more docile. They may be removed after the engine is broken in. The washers are not included in the Royal Spitfire combo; the A-J changes make 'em unneeded.

Construction details are: 1) Finished, painted (fuelproof) sheet balsa wing. 2) Clip-on wing guide. 3) Formed plastic canopy. 4) Finished, adjustable pitch, metal propeller. 5) Royal Spitfire engine. 6) Finished control system (U-control). 7) Offset metal fin. 8) Finished, hinged elevator and stabilizer. 9) Finished, profile balsa fuselage. 10) Landing gear with aluminum and rubber wheels. (Control handle and non-metallic lines included).

Deluxe Radio Kit

Jasco's newest has all the trimmings

■ The R/C builder is doing better than ever these days—it's getting to the point where he really has quite an array of kits from which to choose. Latest to appear on the dealers' shelves is the R/C Master, product of Junior Aeronautical Supply Co., New York 3, N.Y. This is a moderate sized ship, spanning 49 in., with 480 sq. in. area. The test ship weighed 3½ lbs., when fitted with Citizen-Ship equipment.

The plane follows the latest trend of eliminating windows in the "cabin," to assure maximum strength. The fuselage is a simple box with 1/16″ top, 3/16″ sides, and 3/32″ bottom. The entire nose section carrying the engine and landing gear is made as a separate unit, held to the rest of the fuselage with rubber bands. Sponge rubber strips (furnished in the kit) between the two isolate much of the motor vibration—a big aid with touchy receivers. The separate motor mount has been found a real help in preventing motor damage and broken props.

The wing and tail are of tapered planform. The wing has one very husky main spar, and a sheeted upper nose section. All ribs are die-cut, as are fuselage sides and bulkheads. There are two compartments available for radio installation, one of them shaped especially for the Citizen-Ship radio with its attached antenna. Batteries may be placed in a compartment on the underside of the fuselage.

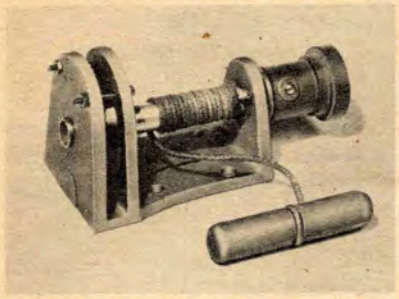
Power may be any of the diesels around .1 cu. inch, or glow engines from .09 to .19. The .09 will do for light radio installations.

The kit is unusually complete, for it contains not only all the wood needed, but all the wire parts—with the heavy landing gear wire bent to shape—husky 3″ rubber wheels, rubber strips for engine section isolation, etc. A big feature is the fact that the kit also has ample nylon covering.

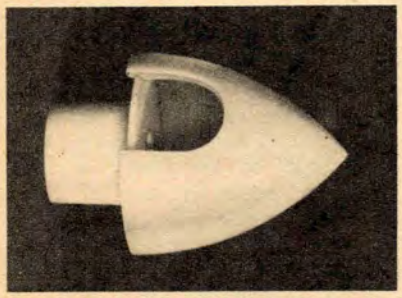
Construction details are: 1) Die-cut, shaped tail group parts. 2) Fuselage assembled about sheet balsa sides. 3) Die-cut wing ribs. 4) Nylon covering for wing and tail included. 5) Shaped leading, trailing edges. 6) Provision for shifting wing for adjustment. 7) Removable nose section including landing gear. 8) Formed steel wire gear, rubber airwheels included. 9) Provision for .09 to .19 disp. engines. 10) Special battery hatch in belly.

Here's a star-studded Line-up for more Flying Pleasure...

NYLON PUMP. Here's the latest advance of Sullivan research. A faster, more positive pumping action than ever before thought possible! Parts of molded nylon give ideal wearing qualities. Long lasting piston type pump, stainless steel spring and two ball check valve make this a truly corrosion-proof pump. Only 50c.



STARTER. Simple in design. Saves its cost in a few months. Eliminates finger picking the prop while battery is connected to glow plug. Batteries last longer. Old engines come to life. Spins fast enough to start a pressure job. Just $1.95 complete.



SNAP-ON SPINNERS. These popular spinners, incorporating the easy snap-on, snap-off action, are possible only in nylon! Positive-locking, require no nuts or bolts to hold them on! Available in 5 sizes, with or without extension: 1". 1¼", 1½", 1¾" and 2". 35c up.

Sullivan Products

Philadelphia, Pa.

Dope Can

AF 1st Looie Frank C. Smith, aero engineer grad of Northrop, takes a postman's holiday and builds models. His collection took 2 years; he's production test pilot at Norton AFB.

News, views, comments and photos from enthusiasts everywhere

■ The last time we came in to see the editor, his "gal Friday" told us that while nobody read his letters everyone reads this column, so we're supposed to tell you that AT has checks for William E. Lang of Baltimore and Douglas Kimura of Chicago. Com'on, fellows, collect your dough and get outta the way. We got a lot of important business to discuss here.

This spring produced a tremendous growth in "service" competition—that is, model contest flying among the military boys. The big Air Force-wide Model Airplane Championships, scheduled for Amarillo, Tex., AFB, July 9 through 15, set off a string of meets around the world, as airmen and officers tuned up their models in a globe-girdling effort to place on the various AF Command teams which compete at the big AF championship meet.

At the Neubiberg Air Base in Germany pulsating engines and soaring gliders formed the keynote of action at the home base of the 86th Fighter-Bomber Wing in the German Regional AF Invitational Model Airplane Meet. All this according to A/3C Bruce L. Miller. Contestants from many European Command air bases and ground force installations, plus representatives from England and North Africa, in addition to a group of German Nationals, matched their skill against each other to the delight of the milling crowds that were in attendance.

The two-day meet, held under the blue Bavarian skies, was won by a strong team from Wiesbaden headquarters of the 12th Air Force, led by its senior member, Capt. Joé Hauser of the base "Wings and Wheels Club." Hauser himself took three firsts in the meet, besting all opponents in the AB Stunt, Balloon busting and Combat classes. In addition, Hauser racked up four second places to take individual honors for the big meet.

Finishing second to the Wiesbaden team was a strong group of German modelers who captured three firsts, plus two second places and five third positions. Close (*Continued on page* 68)

Building models at NYC's Lighthouse for the Blind, these sightless youngsters find prefab kits just the thing. Ronald Marchese (lt.) instructs; Maurice Case, recreation director (rt.).

The Two BIGGEST Names in Model Airplanes!

G2 Aeronca

G5 Boeing Kaydet

G9 F-51 Mustang

G8 Spad

G7 Cessna

G11 Navion

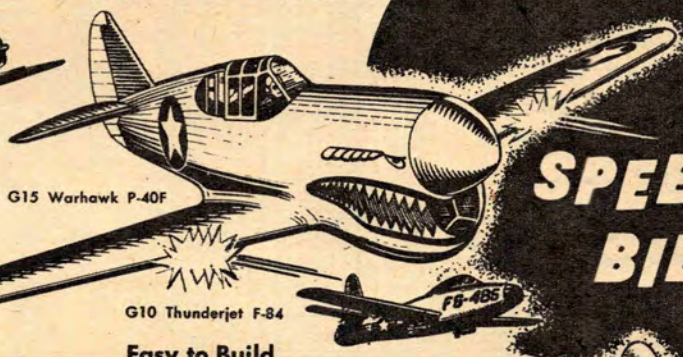
G6 Long Midget

G4 Ercoupe

G3 Monocoupe

G13 F-86 Sabre Jet

G14 Corsair F4U-5



G15 Warhawk P-40F

G10 Thunderjet F-84

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G12 Hellcat

Most Popular Flying Models of All Time

G1 Piper Cub

1952 Model Building Sensation!

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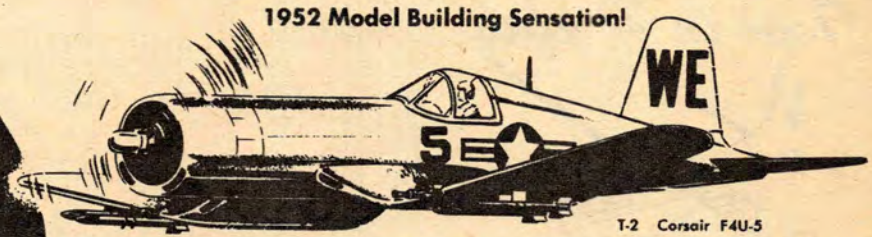
Balsa Solid Scale Model Airplanes Plastic Parts 89c



T-2 Corsair F4U-5

T-1 Mustang F-51

T-3 Thunderjet F-84

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You can build the most beautiful, authentic and detailed exhibition models you ever saw with Monogram's Superkits. Even with all the detail, building is so easy you can't do it wrong. Sm-o-o-o-th finished balsa, plastic parts and genuine authentic color decals.

Super Detailed • Scale Finished 16 to 23 Plastic Parts in Each Kit

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CLEVELAND

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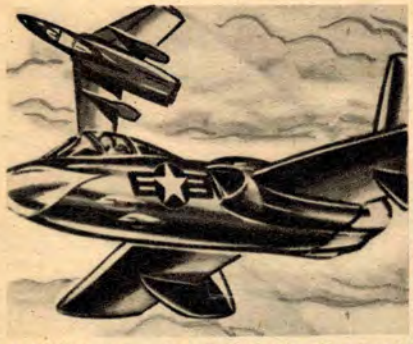

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- LOCKHEED F-90
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EACH $1

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1" SCALE

BOEING P-26A (ABOVE) $6.95

GT. LAKES TRAINER.... $5.95

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THE GREAT "QUICKY" SETS:
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WHEN ORDERING BY MAIL (If your dealer is out of stock). Minimum order is $2. Include 35c pack-post to all orders up to $3.50 — over $3.50 add 10%. No COD's. Foreign customers add 10% in addition to pack-post charges. Ohioans add 3% Sales Tax. SEND 5c FOR LATEST AIRPLANE CIRCULAR.

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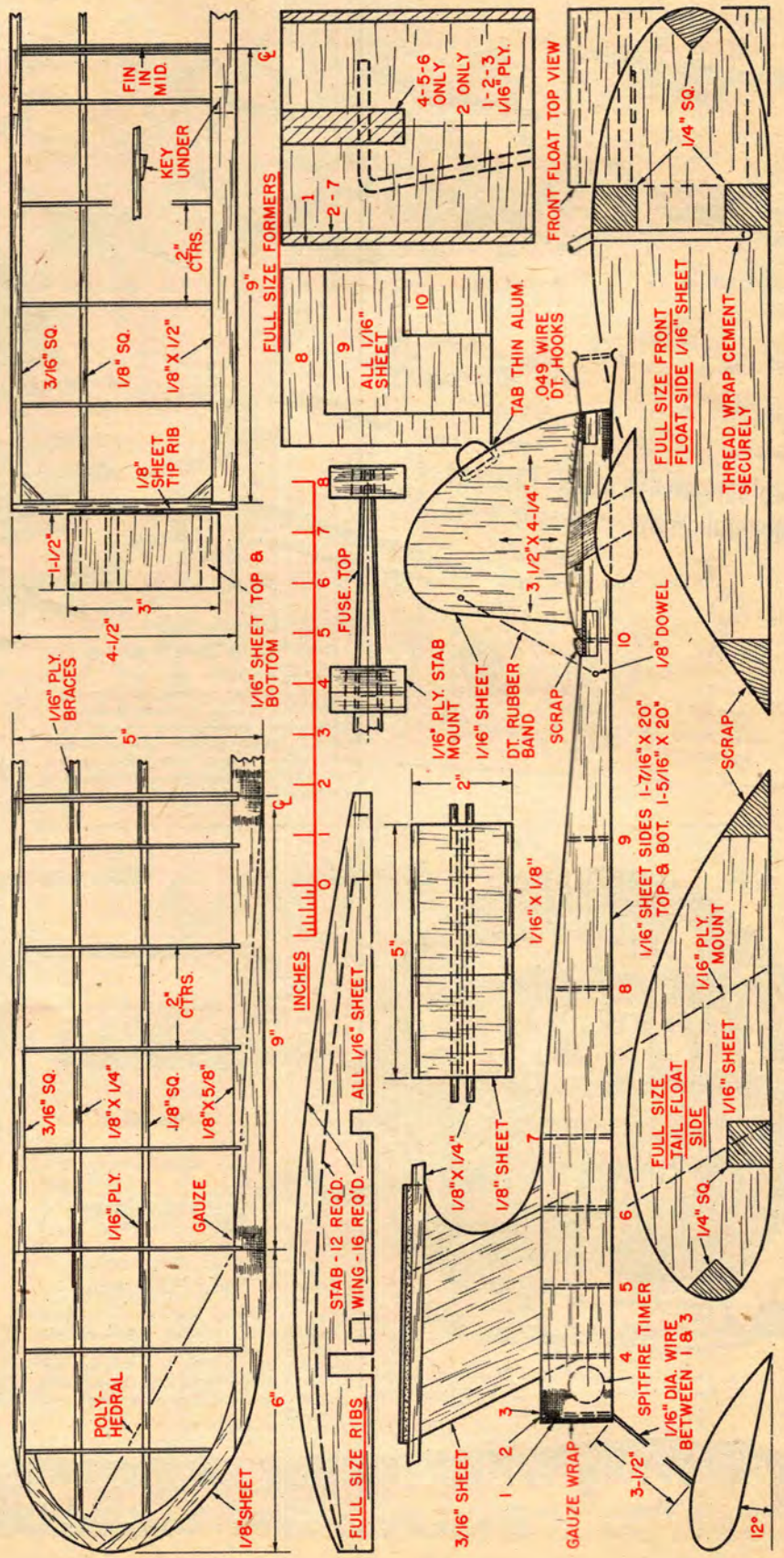
During height of last contest season Paul de Monterice, Jr., of Fishkill, N. Y., set official national duration record of 15 min., 45 sec. with his ultra-simple "Kopacetic" free flight rise-off-water Half-A gas model. Design exceptional for its direct approach to problem of good water stability and simple force arrangement.



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THE FIRST REALLY DIFFERENT ENGINE SINCE THE GLOW PLUG

NEW THRILLS IN ½ A PERFORMANCE

Announcing the Thimble-Drome SPACE-BUG

LOOK! all these Features in one engine for

Superior performance in speed, stunt, sport, free-flight, payload, etc. Visit your dealer and look it over.

1 Speeds that will exceed your wildest hopes.

2 Power . . . Stunts ships that most .049s will barely fly.

3 Easy starting . . . even when brand new.

4 No break-in necessary. Install, crank and fly.

5 *First flight amazing*? Wait until it's had a few hours and really gets hot.

6 Generous sized stunt tank. Stunts, loops, flies upside down with never a miss.

7 Engine mounts with cylinder in *up, down, right* or *left* position.

8 No rubber hose or external fuel lines.

9 Air filtered through screen of 10,000 holes per square inch.

only $6.95

10 Needle valve removed from exhaust and propeller . . . cool, safe to adjust.

11 Equipped with a plastic-coated wood propeller . . . Smooth for performance . . . Strong for safety.

12 Quick and easy to take apart and re-assemble. Rugged construction requires only reasonable caution.

also announcing

The NEW Thimble-Drome HANDY REEL

● Beautiful two color plastic control handle, with a separate spool for each line. Any size line, wire or braided, can be used. Holds up to 200 feet or even more of small sizes on each spool. To use, snap the dogs back —pull out lines to desired radius—adjust lengths to desired handle position—and reset dogs, which *positively lock spools*. If you break or kink a line, merely cut it off and pull out some more and resume flying. Easily loaded with the wire of your choice. Have one loaded and ready with each size line you use.

L. M. COX MFG. CO., Inc. • P. O. BOX 476, SANTA ANA, CALIFORNIA

BEECHCRAFT "17"
$2.95
Air Trails Blue Ribbon Model. A replica of this world-famous biplane. Complete with stamped metal cowl. .045 to .099 Engines.

BOEING P-26A
$2.95
Air Trails Blue Ribbon Model. Semi-scale version of U. S. Army's first all metal pursuit plane. Terrific stunt & sport flyer. "1/2A" Engines.

LITTLE SABRE
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Air Trails Blue Ribbon Model. Semi-scale version of the F-86 (Sabre Jet). Modified for peak U-Control flyability. .020 to .074 Engines.

WORLD-FAMOUS MODELS at a price EVERYONE CAN AFFORD by SCIENTIFIC

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Air Trails Blue Ribbon Model. An authentic replica of the famous P-51 escort fighter. Prefabbed kit. For .020 to .074 Engines.

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For team racing or sport flying. Styled after prominent full scale racers—with "cheek" type cowls. For .039 to .099 Engines.

HALF-PINT RACER
$2.95
Man . . . what action! Here's a quality powered race car at a tiny price. Operates on any smooth surface. For .020 to .074 engines.

LITTLE DEVIL
$1.50
Here's real value . . . plus! A control-line plane that suits your flying tastes as well as your pocketbook. Carved balsa fuselage. "1/2A" engines.

PIPER CUB Special
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Authentic scale replica of this world famous sport plane. Other models in this series: AERONCA SEDAN, STINSON VOYAGER and CESSNA "170". For "1/2A" Engines.

Chris-Craft RIVIERA
$3.50
What a value! And what a ship! It's an authentic reproduction of the popular Chris-Craft runabout. For .020 to .074 Engines.

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Exciting Action! Here's a high speed ship that's a real champion. The last word in speedboating thrills. Power it with any A or B class engine.

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BUY FROM YOUR DEALER & SAVE 25c MAIL CHARGE

SEE THESE SCIENTIFIC MODELS AT YOUR FAVORITE HOBBY SHOP

Walter Good

(Continued from page 32)

rewritten to include R/C operation, and finally passed to become effective in March 1952.

Already some problems appear on 27 mc. Even though interference is a small factor, it can be avoided almost completely by flying at least two miles away from hospitals using diathermy, industrial plants using 27 mc equipment, and strong Amateur Stations on 10 and 11 meters.

Probably more serious is the interference between modelers themselves, flying at the same field. The 27 mc band is too narrow to fly more than one plane at a time. Therefore, a little "take your turn" courtesy is well in order. Some fellows have found that grouping the transmitters at the field helps prevent those famous last words, "Sorry, I didn't know you were in the air, too"!

Many modelers know that the FCC inspected almost every R/C meet during 1951, and they observed some illegal operation. They will probably be there in 1952. Let's give them a clean record to look at. During sanctioned meets the CD's are to allow only legal R/C operation. We've got easy bands now, there's no excuse for illegal operation. Let's take this job of policing our R/C operations on our own shoulders and show the FCC that we really deserve the band we've been granted. So get busy and convert that gear to the new band. It's time to get legal!

(For more detailed information on 27 mc., write to AMA Headquarters for "Radio Control Bulletin.)"

Air Adventurers

(Continued from page 16)

Boeing, at least, does not think engineering needs will decline or even level off when military production slackens.

Another indication of Boeing's "engineering optimism" is the fact that company representatives are visiting 160 schools and colleges to talk with over 3,000 student engineers about coming with Boeing in the future. Other aviation companies are also out scouting the colleges for likely talent for their engineering staffs. Grumman Aircraft Engineering Company, as a typical far-seeing organization, awards ten complete scholarships every year to promising high school students interested in attending aeronautical engineering schools—with the promise of a position at Grumman when they are through.

Much of the routine work that used to be done by junior engineers has recently been turned over to semi-skilled craftsmen.

At Boeing an eight-weeks drafting course has been given to more than 400 talented non-engineers and about 100 a month are admitted to this training. At the completion of this course they become high-grade assistants to the more highly skilled engineers—a good career in itself.

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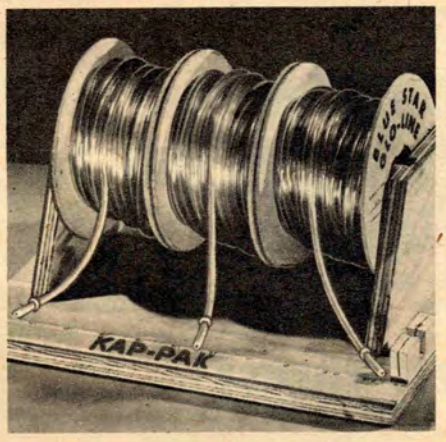

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Look at these Features:

- CRYSTAL CLEAR
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- MORE PLIABLE
- WILL NOT BECOME BRITTLE

Insist on **KAP-PAK** *Model Accessories*

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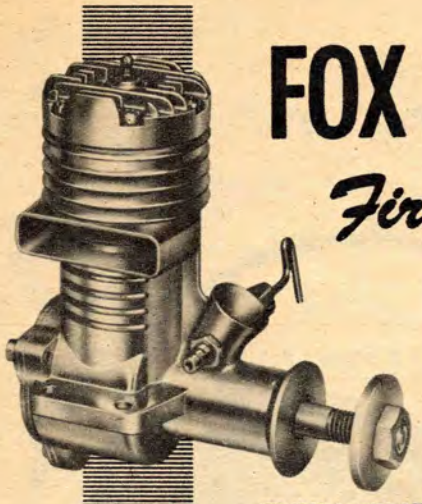

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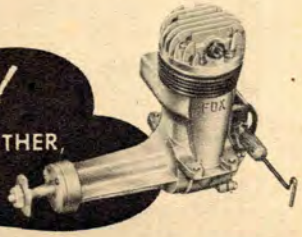

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Narrow blade model • Free Flight • Pay Load • Radio Control • For engines .020 to .074 displ. 5" dia. 2-3" pitch ½" dia. hub, .140 shaft hole.... 15¢
5" dia., 2-3" pitch ⅜" dia. hub, ⅛" shaft, 3/16" recess.. 15¢
7" dia., 2-3-4" pitch ⅜" dia. hub, ⅛" shaft, 3/16" recess.. 20¢

SERIES 35 "Plasticote"
Medium width blade, speed model engines .19 and .29 displ. 6" dia., 9-10" pitch ¾" dia. hub, 3/16" shaft hole.... 25¢
7" dia., 8-9-10" pitch ¾" dia. hub, ¼" shaft hole..... 25¢

SERIES 25 "Plasticote"
Wide tip model, more blade area than series 15 • Free Flight, Controline, Speed-engines .035-.35
5" dia., 3-4-5-6-7-8" pitch ⅝" dia. hub, ⅛" shaft, 3/16" recess... 15¢
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9" dia. 3-4-5-6-7" pitch..... 25¢

STANDARD RACING
Hardwood with lacquer finish 7-8-9" dia. • 9-10-11-12-13" pitch • Engines .29-.61 50c

America's Choice in Quality Props

GRISH BROTHERS • ST. JOHN 1, INDIANA

The Pulitzer

(*Continued from page 20*)

was close behind at 214.4 mph, with the PW-8 pursuit last at only 168 mph.

So the monoplane finally beat a fast biplane in fair fight. Yet the Army put the Verville in mothballs and didn't consider another monoplane pursuit for five years!

For the 1925 race, the Army and Navy joined in financing the building of three new racers based on the 1923 Curtiss R2C-1 design. These jobs were practically identical externally to the 1923 ships, the major differences consisting of lighter radiator units, cleaner windshield fairing, and a brand-new Curtiss 12-cylinder engine type developing 619 hp at 2350 rpm for racing. The result was to raise top speed to 264 mph and to improve overall maneuverability. The Navy owned two of these three ships.

The 1925 Pulitzer race was scheduled for Oct. 10th during the National Air Races at Mitchel Field, Long Island. The entry list consisted of only six ships—four standard Curtiss Army and Navy pursuits and two of the new Curtiss racers, entered by the Army and Navy. The new Curtiss engine in the Navy plane wasn't running right in trials, and at the last minute it was replaced by one of the old 510-hp units used in 1923, leaving Lt. Cyrus Bettis in the Army job the definite favorite.

Storms caused postponement of the high-speed events for two days, but finally on the 12th, the Pulitzer race was run off in two heats, one with the two racers and the other four pursuits in the second. As expected, Bettis in the Army racer came first, covering the four laps (124 miles) at an average of 248.99 mph, with Al Williams in the Navy job duplicating the 1923 lap speeds by finishing second at 241.71 mph. The second heat was won by Lt. Dawson of the Army at 169.9 mph.

The slight increase in speed made by Bettis over Williams' winning average in 1923 was a great disappointment to the Army Air Service. Poor weather had something to do with it, but the fact remains that the additional 100 hp had raised the actual top speed only some 10 mph, or 3½ percent. It was all too clear that the "point of diminishing returns" had been reached with the biplane.

Though France at that time held the world speed record of 278.5 mph with a cantilever monoplane, the U.S. military services made the decision to stick with the well-tried biplane for pursuit designs. This decision hexed the Pulitzer contest, for it was plain that further

(*Continued on page 60*)

Don't Miss Next Issue:

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The most rugged and flyable ½ A Stunt model available. The big, thick wing gives superior performance with all small engines, all balsa construction gives ruggedness and ease of assembly!

AN OUTSTANDING KIT

- Full Size Plans
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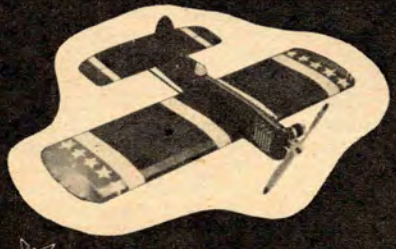

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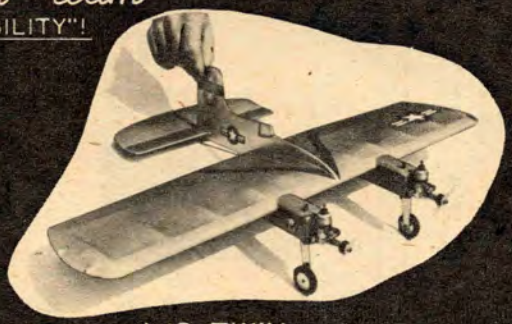

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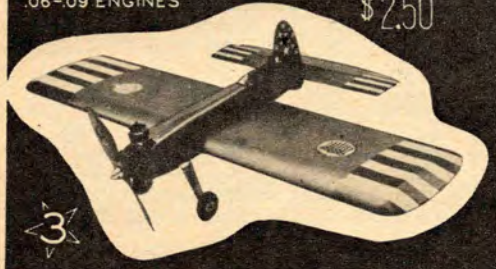

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F&B HINGES—Invisible, everlasting, they never pull loose. Per set ..... 30¢

F-B MODEL AIRCRAFT — 3240 LARIMER — DENVER 5, COLO.

The Civil Air Patrol Cadet

■ Congress and the Air Force are much better aware what CAP is about since the 1952 annual dinner in Washington.

From each of CAP's State and Territorial Wings, the ranking CAP officer and one chosen Cadet flew to the meeting to dine with their own Senators and Congressmen and hear President Truman stress the importance of Civil Air Patrol.

The AF need for young flying Cadets and other recruits has become so increasingly acute that all past estimates of the CAP program must be revised upward. There will be a strong effort to meet the 100,000 CAP Cadet quota in the current fiscal year.

President Truman told the CAP he was deeply concerned over the drop in student and private pilot licenses issued by CAA, and the small numbers of young people now learning to fly. Congress, he said, had better support the CAP. Speaker Rayburn and Air Force Secretary Finletter outlined the urgent needs of the Air Force.

That very evening, a firm promise was made for passage of the long-pending bill to compensate CAP members or their dependents for injuries suffered in official missions, with retroactive pay for those injured in past service since the first flights in 1941.

The Air Force Generals present, with their retired Chief, Gen. Carl A. Spaatz as master of ceremonies, were pop-eyed over the great esteem won by the patriotic work of their unpaid and often unrecognized volunteers in CAP. This is going to show in plans now forming.

Meeting Cadet quotas is the big job for the states now lagging. Here are some of the top Wings, according to a recent Headquarters tabulation:

Alaska leads the 52 Wings with 138 Cadets or 345% of its quota. Wyoming is next with 714 Cadets or 297% of its quota. Hawaii is third with 886 Cadets or 216%.

Next come Utah with 193%; Rhode Island, 184%; Colorado, 167%; New Hampshire, 162%; New Mexico, 154%; and Puerto Rico, 153%. Note that the Territories all are high on the list.

On the other hand, 33 of the States are under 70% . . . What are *you* doing to

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PLANES-TRAINS-SHIPS-PARTS-SUPPLIES

Cadets of St. Petersburg, Fla., get Link instruction at CAP's Whitted Field building.

get new recruits, organize and build?

Our first Cadet Reporter, appointed under the plan to have one Cadet channel copy for Air Trails from each CAP Wing, is Cadet 2nd Lt. Jason Chamberlain of New Hampshire, age 16.

His first report, forwarded by Major Barbara T. Gunn of the Wing Staff, tells of a typically busy and happy CAP organization. The New Hampshire units spent the winter studying air navigation and other classroom subjects, preparatory to summer flying.

All Cadets are eager to win their observer wings. An Air Force L-4 is sent from unit to unit for cadet airlift with Senior CAP pilots at the controls.

Join the Civil Air Patrol—the civilian auxiliary of the U. S. Air Force. Cadets are 14½ to 17; Senior members are 18 and over.

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City (and zone).....

State.....Your Age.....

Air Trails, Aug. '52

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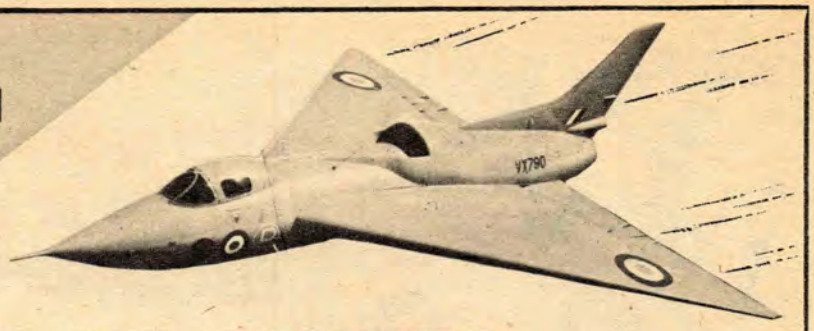
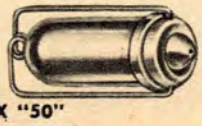


JETEX JET ENGINES



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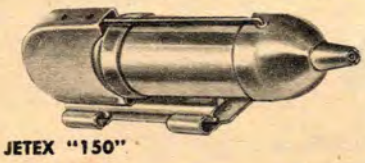

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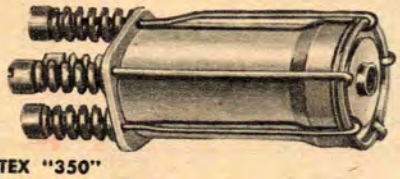

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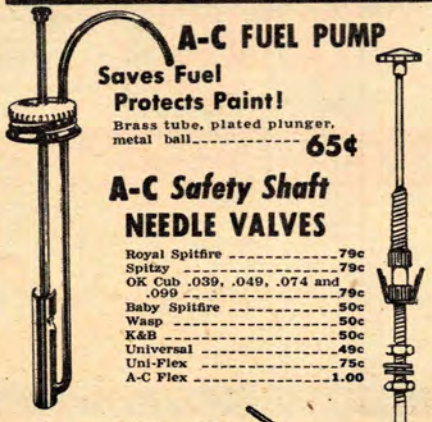

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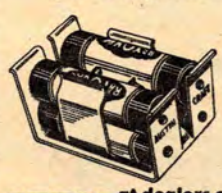

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(*Continued from page 56*)

pure speed development on the biplane was useless. The Pulitzer Trophy was thus withdrawn from competition after the 1925 race, being replaced on the National Air Race program by the Kansas City Rotary Club Cup race.

With the dropping of the Pulitzer, maximum N.A.R. lap speeds took a nosedive—and it wasn't till Jimmy Doolittle fanned the Thompson pylons with his 800-hp "Gee Bee" in 1932 that the Pulitzer speeds were exceeded!

The Prexy Speaks

(*Continued from page 33*)

that should be applied to all sponsors. On the Nationals level we find a ruling being established that will require a Nationals Champ to fly in three events each of three specific categories.

Of course for every one of these items we have hundreds of individuals like Harry McCall of Cleveland, Clarence Wells of Pennsylvania, Ed Lidgard and Bill Fletcher of the Wakefield Committee, Walt Good of Radio Control, Dick Everett of California who are working their hearts out in promoting, cementing good relations, building up the services and the accomplishments of the Academy—and usually with much less fanfare than with our "bad notices."

I see our biggest job as that of consolidating the good things we do and want to do and safeguarding against the bad things that we are likely to do in an organizational framework that will guarantee the development and perpetuation of the Academy into the organization we want it to be. We can make that highly idealistic aim an existing fact only if every member (license holder) will think through the problems concerning him and present the Academy officers and me with concrete suggestions, not just gripes, but real sound solutions that we can put into constitutional changes, By-Laws or workable rules and standards.

Jim Thompson gets his "Hogan Bel Air" off at a recent West Coast meet. Ship is powered by a .32 Torp and boasts 800 sq. in. of wing area. Looks like a 100% unassisted ROG to us.

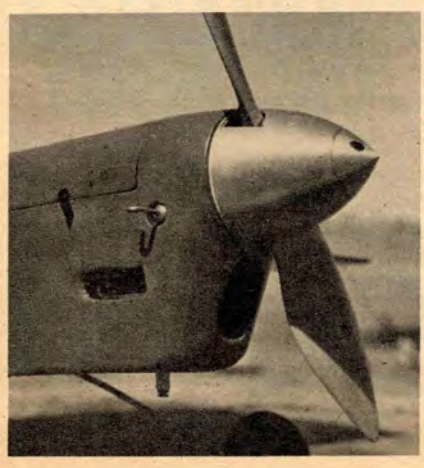
■ Most free flight contests are not won by the best airplane nor by the luckiest contestant, but in the great majority of cases by the guy who came out to the field well prepared. Since the Nats this year are being held in California, a lot of you fellows do not know the weather conditions and the types of models which you will come up against. We will herewith try to give you the benefit of our experience and tell you what to expect.

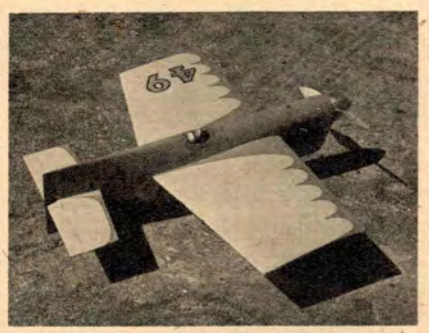
The first thing we do before entering a contest is to decide just what events to participate in, and take advantage of the schedule so we will have more of a chance in winning. This year the Nats' point system makes these choices even more important, so we will list first the events we would fly in and the reasons for such choices.

First, the free flight gas events. It is possible to build one gas model which will qualify you for the necessary three events; this could be either of the two following models: a large .19 powered Class A payload model can be entered and flown very successfully in Class A-free flight, A-B PAA-Load and then fitted with floats for R. O. W. If you like the B-C type of model, all you need is an extra engine and floats for three events.

For the U-control events, how about a good hot scale model of the "Buster"? It could be flown in both scale and team race, then if you really wanted too, it could be entered in the B speed. Or you could build an A-B speed job and fly in stunt as well as speed. If you don't have much time or don't like any particular type of model, this is the thing to do.

As for the non-gas powered events: Hand-launched glider is a good one-model, two-event quickie; you can fly it indoors or out. The wing and tail from your gas job will perform very nicely on a towline glider. One thing to look out for—you cannot enter the same model in both rubber events. In any other events on the agenda, if a model qualifies it can be entered in more than one event. (*Continued on page* 62)





Short—and we do mean short—'n' sweet is Don Chinn's close-coupled team racer. Low in aspect ratio and low in weight. Uses 9/6 Tornado with .19 Torp. "Mighty fast."

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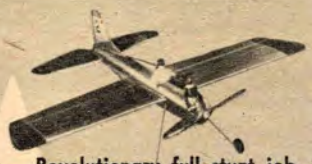

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Western

(*Continued from page* 61)

The foregoing is the quickie way to qualify for the decathlon championships. To get down to the cold hard facts, concentrate on those events you like, the ones you have had the most experience in, and build some good hot ships. The other events you fly in will not even enter into the picture providing you do fly in them with something other than a clunker. You will get points in every event—if you make an official flight.

The time to fly in free flight events is very important, for since Los Alamitos is so close to the Pacific and the ocean breezes do come up every day, you can expect the average Half-A to clock in at about 4½ minutes O.O.S. at 2 o'clock in the afternoon, the A, B and C jobs little longer, unless they are real big. So from this you will see that it is important to get in your flights with the smallest ships first. All hand-launched glider flights should be in before eleven in the morning. By all means color the outdoor glider so that it will stay in sight longer. The indoor type of slow-flying glider has proven best since it will hang onto those low, early morning thermals best. Save the large ships for last—it pays off.

Indoors will not matter too much except you can expect drifting in the afternoon when the sun is on the west end of the building. Test flying will probably take up most of the morning, so to be quite frank about the situation we can expect the longest flights late in the afternoon and evening. This is true of most indoor contests, though. You will have mike tanks for last-minute patches. There will also be plenty of helium-filled balloons available for hook-ups.

Speed flights will probably add up late in the afternoon as usual, since it seems to take all day to get mixtures correct. Dampness will vary throughout the day —hence be careful of what you use. Not being speed flyers, we can't go into detail other than remember just when top speeds have been posted. The seven circles provided will allow ample time for everyone entered.

Since the literature put out doesn't seem to adequately state how the championships will be decided, we will try to explain it once and for all for everyone. As said before the top times will be listed in numerical order regardless of age bracket. From this down to the bottom time everyone will be listed. 100 points will be given for top time posted, one point for the bottom. A straight line curve will then be drawn between the two and points will be awarded as to how your time falls on this curve.

The top Jr., Sr., and Open contestants will then be judged against the entire field for their respective championships. To go on, it is possible that one may beat everyone in his age group, but still receive only 50 points as a first-place winner, because of the many contestants who post better times. Thus each first place in each age

(*Continued on page* 64)

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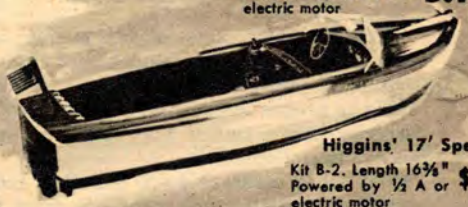

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RUSSELL BROTHERS
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(*Continued from page 62*)

bracket will not necessarily receive 100 points toward his individual championships. This one point and the fact that a contestant is forced into flying in categories in which he expresses no interest just to become the champion of his age bracket, are apparently the weak points of this system. All in all, though, it is by far the best we have had yet. Next year's rule book will undoubtedly include a ratified system which must be followed in the coming years.

We are trying to emulate Maurice Teter and Earl Donohoo who ran last year's Nats in Dallas on a "for-the-contestants" basis.

The Bakersfield Annual proved to have the highest entrants in PAA yet and the times were high—the highest ever recorded in Half-A. John Werts, Jr. had already totaled 21:30 by the time we got there; Dick Sladek had posted high time for A-B. But Gardner's watches sure brought them out.

Lt. Harry Vogler and the Air Force gang were on hand, snowing a lot of the opposition. Gene Stiles and Tom Moffett were along this time, making this team one to be reckoned with at the Nats. This "special duty" seems to be it.

Along these same lines we were in conference with Lt. Jim Fessington, special services officer of the 11th Naval District recently. He seems mighty interested in seeing that Navy personnel get every opportunity to compete in the Nats this year, and is pushing this meet in a big way through every means at his command, even trying to get the fellows assigned to special duty at Los Alamitos for the duration of the contest. Entry blanks will be available at every command with details of the different events in his weekly recreation bulletin. A real sincere guy; of course, his belonging to an Exchange Club in the San Diego area doesn't dim his enthusiasm any!

The WAM seem to be getting hotter each and every contest. How they manage to run so many events off in one day we just can't figure out, except that Pop and Mom Robbers have their hands in it—those two really know their stuff.

Speeds are getting higher, more of the fairer sex are scoring. Vic Garner has served advance notice that he will have to be reckoned with at this year's Nats. He won four first places, set two new records in Proto Speed and won C-D speed with 147.23 mph. Herm Shiman also is going great guns, setting a Class D Proto record; his 146.40 in C-D speed is really moving. Bernice Jaynes and Janyce Wood are two girls who are burning up the air. Janyce's 123.95 was tops in A-B speed; she was 2nd in C-D advanced. Bernice won the endurance contest, was 2nd in C-D beginner and was on top for women's stunt. How about that?

—DICK EVERETT

Forster Engines

(*Continued from page 47*)

resist wear less under certain conditions.

The general workmanship and running fits are excellent. All aluminum parts are pressure die-cast with a good finish. There was less than .0002" clearance on the main bearing in the engine tested. The wrist pin fit well. A clearance of .0015" was allowed between the piston and cylinder for expansion of the piston.

The engine test started out with a break-in run on a 10/6 propeller as recommended. There was no tendency to be tight, so higher speeds were used after the first half hour. Starting was easy whether hot or cold and no trouble was experienced even with the 7/4 propeller which produced 18,000 rpm.

Most ring engines leak when hot, but the F-29 would seal after a hard run. Choking or priming in any manner produced good starting provided the engine was not flooded. The propeller did not kick loose or slip at any time during starting or running. After operating at 18,000 rpm and all the other tests, the engine was checked carefully and showed no sign of undue wear at

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the bearings and still had a good compression seal.

Parts Illustrated

1. Crankcase: die-cast aluminum, 1.13 oz. 2. Glow plug: steel, 1/4-32 thread, .08 oz. 3. Washer: copper, .035" thick, .02 oz. 4. Cylinder head: die-cast aluminum, 1⅜" dia., .34 oz. 5. Cylinder: heat-treated steel, .750" bore x 1½" long, 1.49 oz. 6. Cylinder head screws: steel 3-48 thread, .07 oz. 7. Cylinder attach screws: steel, 3-48 thread, .05 oz. 8. Front cover plate: die-cast aluminum, .58 oz. 9. Carburetor assembly: aluminum and brass, .22 oz. 10. Connecting rod: aluminum, 1 5/16" long, .11 oz. 11. Crankshaft: steel-hardened and ground, .375" shaft-.250" crank, 1.07 oz. Drive washer: aluminum, ⅞" dia., .16 oz. Front washer: steel, ⅞" dia., .15 oz. Propeller nut: steel, ¼-28 thread, .07 oz. 12. Shaft retainer: spring steel. 13. Front cover bolts: steel, 4-36 thread, .11 oz. 14. Wrist pin: steel hardened and ground, .249" dia., .06 oz. 15. Wrist pin retainers: spring steel. 16. Piston: die-cast aluminum, .7485" dia. Piston rings: cast-iron, .20 oz.

Engine Data

Performance. Bare weight: 5.91 oz. Propellers—10/6 wide blade wood: 8,300 rpm. 9/6 wide blade wood: 11,000 rpm. 9/6 narrow blade wood: 12,800 rpm. 7/9 wood: 14,300. 7/4 plastic coated wood: 18,000 rpm. Fuel: Racing mixtures increase rpm in high-speed range. Fuel level test: 12½" at 11,000 rpm.

Design Data. Displacement: .29 cu. in. Class: B. Stroke: .665 in. Bore: .750 in. Stroke bore ratio: .886. Compression ratio head: 7.6. Compression ratio base: 1.5. Port area intake: .046 sq. in. Bypass: .057 sq. in. Exhaust: .131 sq. in.

Construction Features. Bearings, crankshaft: bronze. Crank pin: bronze. Wrist pin: aluminum. Front rotary valve with adjustable angle.

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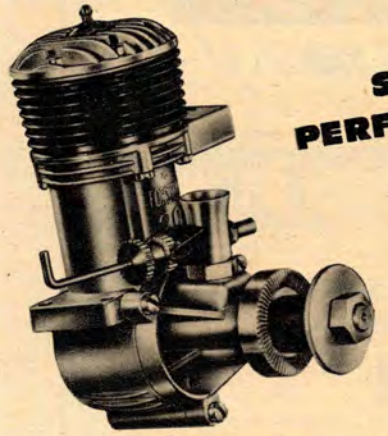

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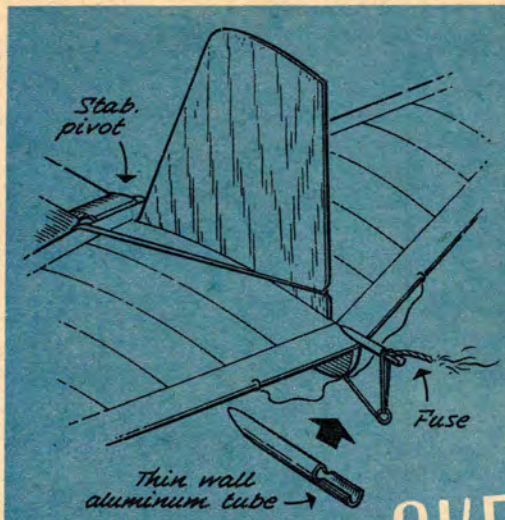
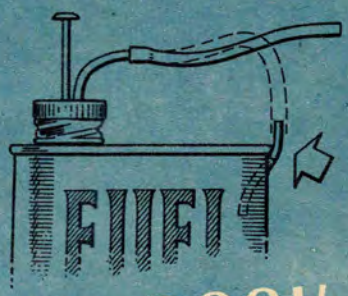


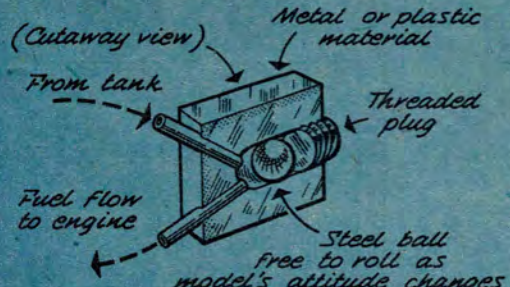
• Swedish modeler C. G. Ahremark submits this fine dethermalizer which minimizes fire hazard. Fuse burns band, then is snuffed out in tube —

• Sonny Bennett, Alderson, W. Va., adds tube to fuel can to prevent waste. Stops siphoning, permits tube to drain back into can.

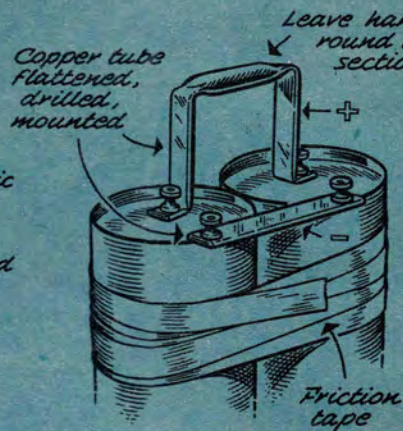


SKETCH BOOK

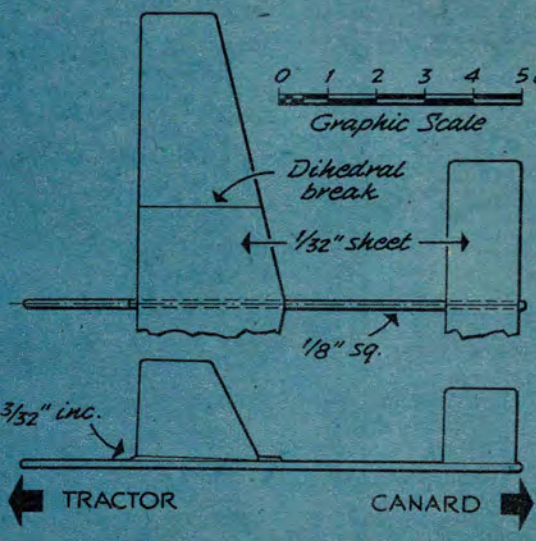
Fuel flows except when ship dives



• Safety fuel valve is idea of Edward Smith, Detroit, Mich. Mounted with axis slightly up in front. Gravity causes ball to obstruct fuel flow in dive —

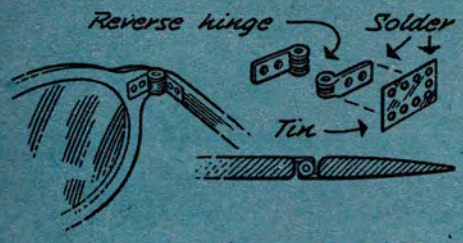


• David McLaughlin, Punxsutawney, Pa., makes these fittings to which battery leads are clipped. No shorting; makes carrying easy; assures 1½ v. parallel hook-up —

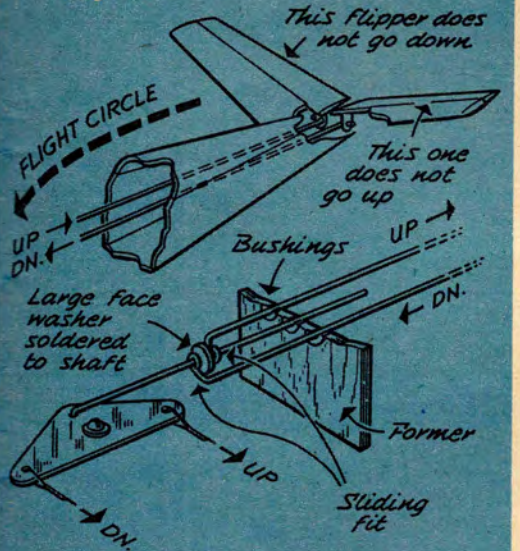


• Quick-convertible glider flies in either direction. Balance as usual for tractor; remove weight, place ½ of it in "tail" for canard flight. Built by Cpl. David Jones, U.S.A.A.F., (Germany)

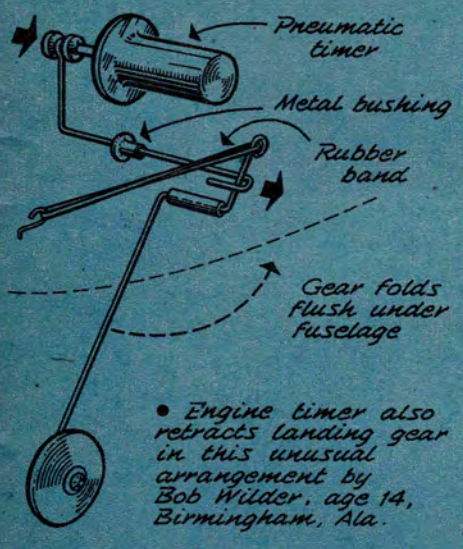
• Salvage hinges from old eye glasses, suggests James M. Denker, Egypt, Mass. Ideal for U-Control hinges, other model devices —



Have you developed something new in construction, control, or flying that might interest other modelers? Send a rough sketch—we'll redraw it and pay $5 for each one accepted. Sorry, we cannot acknowledge or send back any submissions.

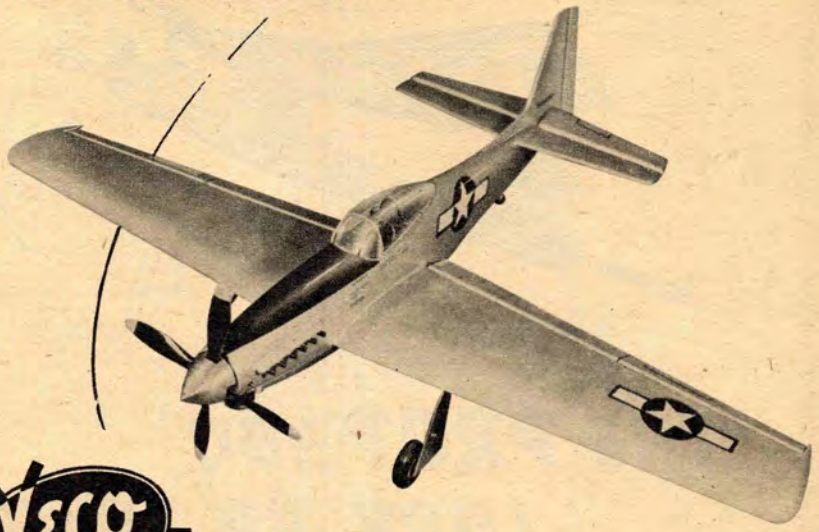


• Clever control linkage for "V" tail model affords built-in safety feature by assuring outward line pull in all control movements—Submitted by Donald Stevens, Ada, Okla.



• Engine timer also retracts landing gear in this unusual arrangement by Bob Wilder, age 14, Birmingham, Ala.

From the "Combat Wise" North American F-51 MUSTANG, AIR FORCE FIGHTER PLANE



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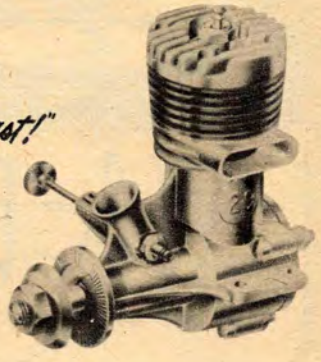

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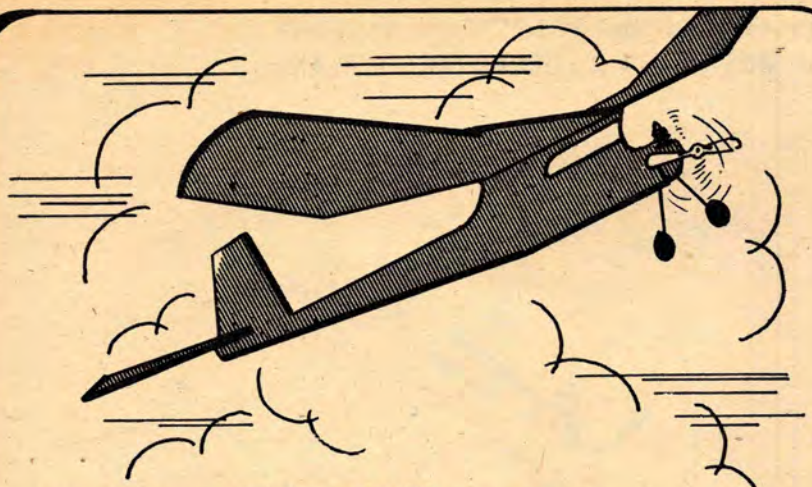

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(*Continued from page 50*)

behind in third position was a team from Furstenfeldbruck Air Base, Germany, which walked off with two first-place trophies and several second and third-place awards.

A highlight of the meet was the jet speed of 126.5 mph racked up by A/2C Harold "Tommy" Baker from Wheelus Air Base, Tripoli. Baker holds the F.A.I. jet speed record, has set numerous National U.S. marks, and in addition holds the AF European Command's jet speed record with 156.6 mph.

Col. John S. Chennault, Neubiberg Base Commander, served as honorary judge, with other judges drawn from personnel from each base represented in the contest. Spirit and competition were outstanding, reported A/3C Miller, as the best modeling members of Uncle Sam's European theater forces began the long, arduous and often heartbreaking trek to the Air Force Finals in Amarillo.

So much for the official story of the contest. Let's hear from a model builder, William J. (Bud) Prahl: "Invitations were sent to all AF stations in Germany and England as well as Wheelus AFB, Tripoli. Two German clubs from the Munich area and a group of modelers from London were also sent entry blanks. Because the U.S. oil workers were off the job at the time and transportation was restricted, those from England were unable to attend. This included the one and only Henry J. Nicholls (Mercury Models) of London who was to judge the meet. The result was that yours truly was drafted in his place and so did no flying.

"Except for a couple of hours Sunday afternoon (rain) the weather was good with everyone having a swell time. That evening, a buffet supper was served for all those connected with the meet. After everyone had his fill of excellently prepared food, our base commander, Col. Chennault, pre-

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sented plaques to the top three men in each category. Now, everyone in the Neubiberg Model Busters, myself excepted, is busy getting ready for the USAFE (US Air Force in Europe) eliminations for the AF-wide meet. I'm busy packing my stuff in preparation for return to the ZI in the very near future. As for future meets here, one is already in the talking stage for some time next fall.

"As for the competition over here, the Germans don't give us much in control line events—*yet*. They have just started in on U/C and are showing real promise. Free flight, towline glider, rubber and radio control are something else again. They can give us a good battle there any time we say the word."

First place winners in the Neubiberg invitational meet were as follows: AB speed, A2/C Thomas, Wiesbaden Wing & Wheels Club. CD speed, A3/C Vick, Erding Air Base. Jet speed, A2/C Tommy Baker, Wheelus Skyclowns. AB stunt, Capt. Joe Hauser, Wiesbaden W&WC. CD stunt, M/Sgt. J. Harvey, Neubiberg Model Busters Flying scale, A2/C Jodoin, Furstenfeldbruck Prop Busters. Team racing, A1/C Baker, Wiesbaden W&WC. Half-A free flight, A2/C Brown, Rhein Main Air Base. Rubber power, Herr Schoenauer, Munchen Flying Club. Towline glider, Herr Finus, Starnberg MAC. ABC free flight, A2/C Jodoin, FPB. Radio control, Herr Heinenberg, Munchen FC. Balloon busting, Capt. Hauser, WW&WC. Combat, Capt. Hauser, WW&WC.

We wanted to go into a little detail on that overseas military-modeling deal to illustrate how effective model aviation is in getting the American way of life publicized around the globe. We think you know what we mean without a lot of mood music: officers and enlisted men competing equally for the chance to represent their commands back in the U.S.; military men and civilians competing on an equal footing; plus all the good fellowship that naturally is displayed at any modelplane competition.

P.S. Washington (the Pentagon, that is) says Amarillo may have as many as 300 en-

(*Continued on page 71*)

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Fully perfected Radio Control outfit now available to the modeller. World renowned for its reliability & ruggedness — so simple to use — nothing to test — just install & fly. Special transmitter chassis with "locked in" wiring & triple chrome plated telescopic whip antenna puts "E.D." out ahead with power output. Complete instructions included. Receiver will fit (with room to spare) in even the smallest R.C. model. All tubes included. Only a few dollars more than kit sets (which come less tubes).

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Complete 3 pc. outfit Prices Separately

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ESCAPEMENT $5.95

TRANSMITTER $29.50

TRANSMITTER: 3A4 tube giving greater radiation than any other CRYSTAL controlled transmitter. Entirely self-contained including new, handsome triple chrome plated telescopic whip type antenna. New "E.D." Aristrol EXCLUSIVE "lock-in" wiring plus close tolerance, pre-tested, electronic components made for a "Hi Power" transmitter. Checked on frequency to conform to FCC ruling of +.04% on frequency. Batteries 135 volts & 1.5 volts. New comfort fit keying switch with 7 ft. plug-in extension cord gives freedom of control.

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POLK'S SPECIAL CONVERSION SERVICE! We will convert any E.D. receiver-transmitter to 27.255 M.C. for $12.95. Includes precision ground crystal. Send INSURED, to POLK'S R.C. Dept. We return postpaid. (Send check or M.O., no C.O.D.)

POLK'S are Radio Control Headquarters! In stock — All leading brands of Radio Control Sets & components.

R/C

(*Continued from page* 10)

resistors of the same value till you get those which give the best accuracy for the various ranges. The three voltage ranges for which the meter is made are, of course, accurate to within one or two percent.

Contest Dope. Still no results of contests to report. To save space here, we will omit further listings of coming R/C contests. However, watch the regular model plane contest listings in each issue—those with an R/C event will be so indicated.

27.255 mc. Info. So many questions continue to pour in on this spot that we should probably have a department here each month to handle general info on this hot subject.

John Cochrane, Baltimore 12, Md., tried a surplus crystal marked 27.2 mc. in the A. T. Annual transmitter, but got no results. Most surplus crystals are marked with the output frequency of the transmitter for which they were intended. However, the crystal may have been cut for relatively low frequencies, since the surplus transmitters normally used many frequency multiplying stages.

The chances are, therefore, that the crystal John has is cut to a frequency entirely unrelated harmonically to our 27.255 spot, and so won't operate in the Annual circuit, which requires a crystal designed for third harmonic operation.

Jim Wood, Los Angeles 18, Calif., also has crystal trouble. His Ham friends tell him that the harmonic crystals for 27 mc. are very fragile and easy to crack, if the circuit isn't just right. He wonders if he shouldn't use a much lower frequency rock (which is more rugged, *and* much cheaper) and use several multiplying stages to get to 27.255.

We wouldn't advise this. Actually, if Jim uses the Annual circuit, or those that were in the April or May R/C Columns, and does not use any higher plate voltage than specified, he will have a tough time harming the crystal. In such circuits the crystal normally runs quite cool, or at least, just lukewarm to the touch. If you feel more heat than this, turn the rig off until you can find out why.

Often, in these regenerative crystal circuits, if the tube is self-oscillating (that is, not oscillating on the crystal frequency) the crystal current will be quite high and excess heat may be felt. When working properly, the crystal should run cool.

Quite a few readers want to know what F.C.C. approved number they should put on their license form, when sending it in. None at all. 27.255 mc. equipment requires no approval, whether it be commercially made, a kit job, or entirely homemade. Just leave this space blank, if your power input is less than 5 watts, and you use crystal control.

H. T. Wood Jr., Hughes Springs, Texas, wonders if A.F. tone control is allowable under the F.C.C. tolerance of frequency. It sure is; tolerance was set wide enough to allow normal slight crystal frequency drift, and also tone modulation of any sort. Several concerns, including Rockwood and Polk's sell A.F. tone equipment.

People, Etc. Warner Swanson, 1777 Lincoln Ave., St. Paul 5, Minn., writes that he has completed *three* transmitters and *three* receivers, per the A.T. Annual. So far the transmitters have all been checked out, but the receivers are awaiting relays. Warner's basement seems to be the local meeting place of all the R/C addicts, and he says that they have cleaned out the radio stores in the vicinity of such items as 9 x 6 x 5 steel cases!

Jim Schenck has his camera plane all finished, and it will have had its first test by the time this is printed. It is a standard Rudderbug, but with an enlarged fuselage to carry a cut-down 8-mm movie camera. Test glides have shown good performance, though the plane weighs 8 lbs. (Wow!) Jim is also working on compensating ailerons, the idea being that he can keep a ship in a constant turn without having it fall off into a spiral. An electromagnet will be used to lock the ailerons by radio, when it is desired to do maneuvers that require a spiral dive.

Jim is a real movie enthusiast, and has films of all sorts of R/C activities that have been carried on by the Pittsburgh Flying Circuits.

From recent correspondence with Frank Schmidt of Erie, Pa., we learn of experiments with our 3-tube receiver (R & T News, Sept. '51). Frank has built up an extremely low-drain version using these tubes: CK546DX detector, CK549DX voltage amplifier, CK548DX relay tube. Total filament drain is 30 ma.! He also changed the detector fixed grid leak to 300,000 ohms and grid condenser to 100 mmf., and the resistor in series with second tube filament to 39 ohms. Frank has used the receiver on 144 mc., by substituting a 958A acorn tube for the 546, and finds results comparable with the 50 mc. version.

Ray Megirian, Jackson Heights 72, N. Y. has also built this 3-tuber. Ray is W2RVY, and working with W2AFA, has been using R/C for boats with considerable success. They are trying to locate other R/C boat operators on Long Island. Ray operates 40 and 80 meter CW and would like to contact other R/C fans on the air.

Claude wondered if it would offend the F.C.C. if he used two frequencies, 465 and 27.255 for control of the same plane. Can't see that it would. F.C.C. prohibits hams from using several different frequencies for *simultaneous* transmission of the *same* signal; R/C does not do this, since each signal is used for a different purpose. Several R/Cers have used two signals in the same band at the same time for R/C, with no F.C.C. complaints.

Q. & A. J. A. Ruffin, Thomaston, Ga., has been using Good Bros. equipment and finds that not all 3A5 tubes he tries will work in the receiver. We learn from quizzing Harry Geyer, who makes this equipment, that practically every RCA or Sylvania 3A5 will work satisfactorily in the receiver.

Further information received from Walt

(*Continued on page* 78)

"DIESEL DEPENDABILITY"

Mills .08 CU. IN. WITH THROTTLE

Bore .40, Stroke .64, Speed 10,000 RPM. HP 1/10, Thrust 20 oz. Weight 3½ oz. THROTTLE gives full control of plane in free flight, control line or radio control. Standard on .08. **$13.95**

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3 in. h., 1⅞ in. w., 4 in. l. Can develop ½ H.P. Total wt. incl. prop. 6½ oz. Thrust 16 to 18 oz., Bore ½ in., Stroke ⅝ in., 6,500 RPM. For planes with 3 to 5 ft. span.

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E.D. 21 cu. in. MARK 4 CLASS B

Bore 0.656, Stroke 0.625 inches. Speed 10,000 R.P.M. Wt. 5¾ ozs. Exceeds thrust of most 5 c. c. engines, 3" high, 1⅞" wide, 4⅞" long. **$19.95**

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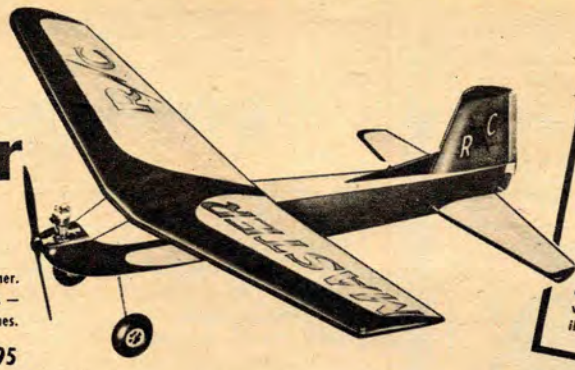

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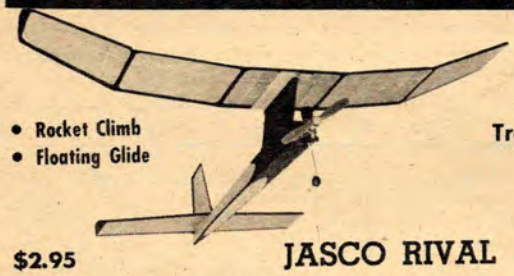

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(*Continued from page* 69)

tries since each of the 12 Air Force commands is permitted to send up to 25 men on its team!

Can't you see a future recruiting poster? "Attention free flighters—Join the Air Force—we guarantee the best model flying fields anywhere!" Or, "Control line jet and speed fans—troubled by your neighbor complaining about the noise? Enlist in the Air Force—we'll fix you up so you can fly your models in utter bedlam."

Gad, looks like we were demobbed from the AF 10 years too soon!

Big Deal at Balto's Friendship. Jim Snyder, chairman of the Baltimore, Md., Model Flyers Assoc., reveals that model flying has now become a permanent part of Friendship International Airport. That's the big new field outside of Baltimore and Washington which was designed to handle all international air travel into the nation's capital area. Jim says a section has been assigned for control line circles and for parking modelers' cars. Four circles have been set up with considerable safety space between each. The big model "port" was opened last April when the Annual Cancer Fund Model Show was presented by the model clubs of Baltimore and Annapolis.

This area will be available for use for contests at no cost, and public address equipment, speed poles, pylons and safety standards are available upon request. Reservations for the entire area may be made by any group wishing to hold sanctioned events; just notify James F. Snyder, 3107 Normount Ave., Baltimore 16, Md., 30 days in advance of the contest. Jim says sanction number or proof of application should accompany request for use of field.

"Baltimore now has two city-supported model fields of large contest size," Jim continues. "Leakin Park Model Field and Friendship. AMA standards apply at both locations.

"We would like to invite two other cities to join us in a team racing circuit and have established a perpetual trophy for this com-

(*Continued on page* 73)

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In ½-A competition from Coast to Coast the Wasp is the favorite power plant with contestants. The Winners' Circle finds Wasp powered entries taking home the hardware. In Free Flight, U-Control, and Payload events the Wasp powers more winners than any other engine. For Sport and Pleasure flying, too, the easy starting, dependable, powerful Wasp is the choice of beginners and experts.

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Free Flight Combination	**$6.75**
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R/C NEWS

No more sequence worry when you use the "E-Z" Automatic Radio Control Switch
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Just disconnect your old push button and hook these two wires to the two terminals on the "E-Z" AUTOMATIC R/C SWITCH BOX
THAT'S ALL ONE YEAR GUARANTEE
Terminals for the 2 Trans Wires

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FEATURING:

- No sequence to remember
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- Turn control knob right—you will get right rudder
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- No electric motors, gears, springs or batteries
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MODEL 102—for 2 arm self-neutralizing escapements
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"AT" Data Dept: How to

■ Most rubber models are flown with right-right adjustments, which means that the power circle as well as the glide is in the clockwise direction. This is the easiest method. Almost invariably, both right rudder and right thrust are required. Other systems, popular in free flight, such as left power and right glide, are far more difficult in rubber due to ever-changing thrust and torque, as well as the changing slipstream from a big fan of a prop. The general idea is to adjust the glide, then, by means of offset and/or downthrust, to adjust the power.

When you begin your test glides, try to find a slope or some high starting point from which the ship can be launched. First make a few hand glides over level ground. It's the old story of correcting tail heaviness (the nose rises abruptly) by any, or any combination of following measures: move the wing back, remove incidence from the wing (decreasing its angular setting relative to the thrust line), add incidence to the stabilizer (raising its leading edge), However, always try to keep a few more degrees of incidence in the wing than in the tail. This may be in any combination, such as zero degrees for the wing and minus two degrees for the tail, of plus two in the wing and zero in the tail, and so on.

Though some excellent models are flown with zero-zero, for wing and tail, the angular difference opposes the development of a stall (since the tail continues to work as the wing lift fades out). Too much positive angle in the tail may produce stabilizer stalls, or an abrupt stall of the ship. Thus, if the ship remains badly tail heavy, and its wing position is fixed, or nearly so, save yourself time and make structural alterations. Shorten the motor to bring the C.G. forward, or alter the wing position.

If the ship seems nose heavy, the opposite corrections are required: move the wing forward, add incidence to the wing, remove incidence from the stabilizer (which may have to be done by inserting a shim under the trailing edge of the stab). The proper hand glide will be a straight line, from the time the model leaves the hand until it touches down. It should glide slightly nose down and land on the wheels.

If from the glide the ship swoops in for a pretty landing, the plane is tail heavy. However, be sure that you are not causing stalls by heaving the ship too strongly or causing dives by launching it too weakly. If it dives, try a slightly harder launch; if it stalls, launch it more gently. Never launch with the nose pointed up, as stalls always result. Put the nose down slightly and aim at a spot on the ground about 40-50 feet away.

Having made short hand glides, try longer hand glides from some elevation. This will give a truer picture of the glide and will save you much confusion when you begin to use power. If long hand glides are made you can feel free to make thrust line adjustments as soon as you use power, without having an out-of-adjustment glide hanging over to upset you.

Take advantage of long hand glides to put in some turn. Bend the rudder tab to the right to produce a noticeable and steady turn. This turn may be increased later when testing under power. It should not be sufficient to cause a spiral dive.

Fly the ship in a large cleared area, preferably over tall grass, as early power flights may dive in after a stall. Begin with 50 turns—if possible work with the winder from the beginning—and hand launch gently. The ship should almost fly off your hand as you move your arm forward.

Power stalls are corrected by add-

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Adjust a Rubber Model

ing downthrust in the form of hardwood shims behind the top of the nose block where it rests against the fuselage. Book match covers or the matches themselves may be used temporarily if they are replaced with glued-on permanent shims before the next flying session. Although you have the plane gliding slightly to the right, right thrust undoubtedly will be needed to make a right turn with the prop running. Shims will be added behind the left side of the nose block to produce right thrust.

While you have to kill off severe stalling tendencies under power with downthrust, keep in mind that a plane which stalls in straight flight may fly properly when in a turn (its lift is devoted less and less to support in a turn), or even may dive. So, if your model is going fairly straight at this stage, permit it to tend to stall without actually letting it stall. In other words, it should be permitted to fly rather nose high, or mush, when you can see that a shade more downthrust would cause it to fly cleanly.

While the theory is to adjust glide, then the power, it is not possible to do so and reach final results without pausing to make slight improvements or readjustments in the glide. Thus, while working with power, gradually increasing turns by, say, five winder turns a flight (20 rubber turns by a 4-1 winder), the immediate objective is simply to make power behave well enough to allow you to get the ship high enough, without aerobatics, to really see the glide.

For example, if, say, 60 turns of your winder get the ship high enough for it to steady out and glide uninfluenced by the after-effects of power (as a slight stall when the prop stopped), note whether the model glides straight or in a circle as desired. Is it slow and stally, or fast, tending to dive? Use the same number of winder turns on succeeding flights until, by means of your rudder trim tab, you have obtained the tightest possible circle without a dive.

This is one point where the veteran doesn't take no for an answer. If his model begins to dive as more and more rudder is applied, he will begin to treat the ship for nose heaviness, either adding incidence to the wing or raising the rear edge of the stabilizer. If the glide is a trifle slow he will add rudder! Make enough flights with the same number of turns until you learn how far you can safely push the combination of more rudder and more tail-heavy trim.

The ship may stall and spin to the right when pushed too far. It is a good idea to back off slightly from the slowest gliding turn you can obtain, because any wind will cause a stall. (If windy the next flying session, begin with the number of winder turns that get enough altitude for a glide, then adjust the windy weather stall out of the plane by making it nose heavy as required.)

When, finally, the glide is to your liking, step up the winder turns, steadily adding downthrust and offset thrust as required to prevent power stalls and to make the ship stay in the right turn under power. Now, again, this is where the expert does not stop.

Say your ship is "adjusted." Get critical. Make believe it belongs to a friend and is a model that climbs, hangs and loses time without really getting up. Maybe it will take more right thrust. (The measure of that is the very first turn after take-off; if it rolls nose high you can add right thrust if necessary, but if it flies on its side, racing around the first turn with very slight climb, look out!).

This is tied in with design. Ships with low areas toward the rear, downswept fuselages, subrudders, etc., and

(*Continued from page 71*)

petition. Also we are now in a position to invite national or sectional competitions and would appreciate hearing from others on these matters."

German Gen. Karlo Eisele has been writing us from Frankfurt/M and says such nice things about AT we pass them along (pardon the blushes): "Your mag is not alone a fine newspaper for model airplane fans, over here it's the bridge between people of different nations. It helps us to cooperate with modelers of your forces here with whom we frequently go flying.

"Modellairplanebuilding or 'Flugmodellbau' as we say it in German is slowly coming up. This year we will have our second postwar National contest. It will be held at Furter, Bavaria; the rules are strictly F.A.I. for we have only 8 different events at the present. No control line, no R/C, no PAA-Load, but I hope we will have all these soon."

Club Chatter. The Xenia Aeromodelers check in with us; it's a new club and must be a mighty noisy one—it boasts not one, two or three, but *four* sergeants-at-arms! Xenia is in Ohio, you know. The reactivated organization has elected Richard Chambliss as pres., William Pitzy as veep, Carl Ross as corresponding sec., and Larry Ellsbury as treas. Ronald Chambliss at 41 Charles St., is the one who sent the dope, so contact him if you're active and live in the area. The group is setting up a progressive series of model building projects beginning with gliders and small rubber jobs, then going on to gas models.

The Old Hickory Aero-nauts clubs at Madison, Tenn., got a big break recently when the Du Pont concern gave them the okay on setting up a flying site on company property. The OHAN's 30 members range the full scale in age. Meetings are held every Thursday night and contests every fourth Sunday, limited to club members only. Nearby enthusiasts can pick up more

(*Continued on page 80*)

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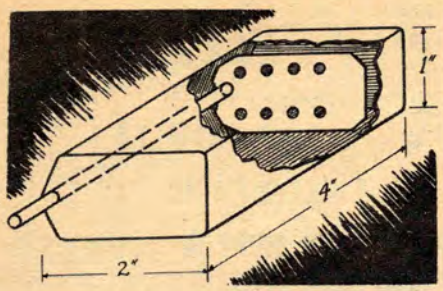

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DATA DEPT. (cont.)

with high areas forward, tend to roll nose up on that first turn and give you more latitude for thrust adjustment.

Does the glide drag its feet? Maybe your clocked time is nothing to rave about. Most of your duration comes in the glide. After getting as high as possible, it all depends on the ship and how you adjusted it. If that first power turn isn't dangerously tight, you can add slight right rudder to take out that mush in the glide or, if the glide turn is already tight, trim the model a shade more nose heavy. After such changes make half power flights, then step up winder turns again, just so you won't pile in.

How much down and how much offset thrust? That varies, ship to ship. As a rule, a 1/16" thick shim for right thrust is plenty, 3/32" is an extreme. For downthrust, 1/32" usually is enough, and 1/16" asks for it. If possible, make thrust corrections 1/32" at a time. Many experts make changes 1/64" at a time using brass shims. The danger in bold thrust adjustments with few winder turns is that a flight at nearly full power increases effects of all adjustments and you may spiral in.

Be patient and methodical. Cement in the shims when done, but allow for the fact that the cement will contribute thickness.

How can you tell when you have too much downthrust? Easy. The early part of the flight, the first turn, or even two or three turns may be racy without the ship picking up decent altitude. At high speed, which means high power, downthrust always takes more effect. This is why the less power your plane uses the more downthrust it requires.

This startling fact is true. What happens is that as a low-powered ship edges toward a power stall, it lacks the thrust to pull itself up in the climb. Thus, added downthrust is required to keep its nose from reaching that danger point. But pour on the power and the nose will be pulled down with that same downthrust. Right thrust works the same way. Thus, half-power flights do not reveal what a rubber job will do fully wound. Sooner or later you must pack in the turns to find out. After that, if the model has sure rigging, you can wind it up any time.

For consistent results give close attention to these features:

Nose block. If one piece of wood, set to grain fore and aft, never up and down. Experts laminate their nose blocks from sheet (like 1/8") with each lamination having its grain at 90 degrees to the next lamination. The block must fit snugly to prevent rocking back and forth, or even revolving under vibration. The key, that portion fitting within the nose of the fuselage, should be thick, of hardwood or plywood. The shoulders of a balsa key wear away. Balsa provides a poor foundation for a tensioner screw.

Wing mounting. Key the wing so that it goes on at right angles to the fuselage every time. A panel forward of the opposite panel will turn the machine. A slightly low tip will do the same thing. (The plane will always bank in the direction of the high side of stabilizer.) A short piece of ½" dowel, half rounded and cemented to the bottom of the wing at the center, is one key that does not restrict the wing coming off in a crack-up. The dowel rests lengthwise in a slot. Use a short piece at the leading edge and another at the trailing edge. Replace temporary shims with a balsa sheet filling under the wing, holding it at the same angle. Place the sheet edgewise on the top longerons.

Stabilizer. A pop-up tail provides some degree of keyed mounting. If

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ATA 521—Fokker Triplane, 20 inch wingspan, control line for .09 engines; B-36 solid model, 14 inch wingspan; Ole Slippery team racer, 30 inch span, .29 engines; Horton IV flying wing scale towline glider, 35 inch wingspan; Little Senator Half-A free flight, 30 inch span; Bienenstein's Mulvihill Trophy 54" winning outdoor rubber stick.

ATA 522—North American AT-6 control line flying scale with complete cockpit details, 40 inch span for .32 to .60 engines; Bristol Bullet rubber scale biplane, 18 inch span; Dunham's All-American rubber cabin, 59".

ATA 523—Happy Medium record-holding Free Flight, .29 or .31 engines, 68 inch span; Executive twin #50 Jetex powered all balsa semi-scale, 18 inch wingspan; Double Whammy stagger wing U/C stunt for .29 to .35, 36" span.

452—Don Still's Stuka Stunt model: Thomas-Morse control line flying scale; Hall-Massey speed models.

352—Air Force Champion team racer Chow Hound, .29 engine, 26 inch span; Consolidated PB-2a U/C flying scale for large engines, 56 inch span: Ehling's National Half-A PAA-Load winner, 33 inch span: Grzeszczak's PAA-Cargo free flight for Half-A engines, 40 inch span.

252—Batiri free flight; Everitt's Wakefield; Bonnie Lass A/2 team racer; Combateer combat U/C; Half-A Copter.

152—Art Chester Racer U/C flying scale; Hot Canary jet speed; K. C. Cutie semi-scale F/F; Do'no' F/F A/2.

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DATA DEPT. (cont.)

possible, provide permanent rigging by sliding the stab through a slot or even cementing it in place. Provide for a mounting that never tilts the stab one way or the other; this is the same as applying rudder.

Rudder. If possible, build in the fin and rudder to prevent any accidental movement. If a trim tab is used, make it of metal, cemented well in place so that any alterations are firm and unchanging. However, turn may be adjusted as well by tilting the stabilizer.

For really tight turns without spins, it will be necessary to warp the right wing tip, which is the tip on the inside of the turn. The leading edge is raised slightly (about 1/16") by loosening the covering toward the tip by holding the panel over a jet of steam, then twisting it slightly in the hands and holding until dry. Hold the wing in front of you so that it is convenient to sight along the trailing edge. Sight chordwise, looking toward the front. Since you want the leading edge up, look for a slight downward warp of the trailing edge (the same thing). Any warp positive enough for you to see, should be enough. *All* other warps must be removed.

Another point to keep in mind for consistency is to make all your motors alike so that replacements won't upset the trim. If possible weigh the rubber each time. Use the same number of T-56 strands, tension exactly the same.

Use the same number of turns in tensioning, and stretch to the same length. Loose tensioning just means bunching—which may occur anywhere along the motor—for disastrous stalls and dives. If landing gear struts bend out of line, always twist them back before the next flight. If a wheel is out of line it causes a side drag—if bent back it may spoil the glide.

Always keep in mind that any tightening of a turn tends to make the model more nose heavy; taking off turn will increase tail heaviness.

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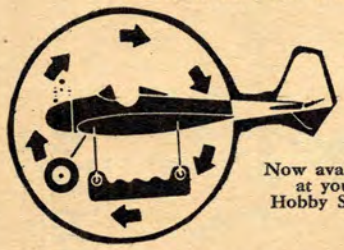

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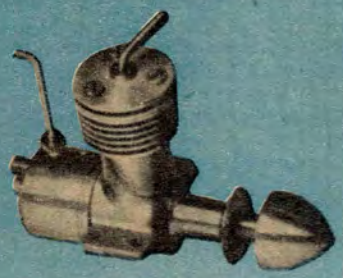


Among the many imported diesel (compression ignition) engines offered by Polk's Model Craft Hobbies is this E. D. Bee of .065 cu. in. displacement for $11.50. Powerplant features disc inlet valve with induction pipe through center of fuel tank. Bore .437 in.; stroke .40 in.; speed 7,000.

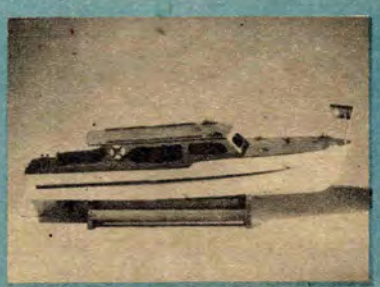
Latest Trixter gas model by the Paul K. Guillow folks of Wakefield, Mass., is "Tiny" a Half-A control line speed trainer and sport flyer. Completely prefabbed, $1.50. Span is 12 inches, length 12 in. Takes engines from .035 to .049 at speeds from 30 to 45 mph. Weighs approx. 2.5 oz.

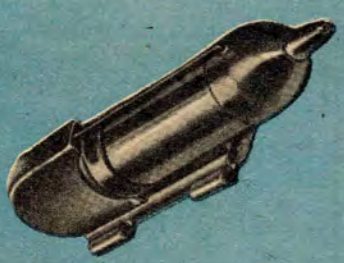
LITTLE SPEEDSTER

MEET DA DUKE

Empire Model Engineering makes its debut with "Duke", a Half-A stunt job of 19-in. span which includes many accessories. $3.45 kit is prefabbed, has bellcrank and elevator horn, preformed gear, assembled fuel tank, liquid cement, fuel line, wheels, all hardware; wing edges shaped.

A 24-inch cabin cruiser is the latest item by Constructo Nautical Miniatures. Prefabricated hard wood parts make up into a realistic durable craft that can take plenty of punishment in water. All parts are numbered for easy identification. Can be used with electric or gas engine.





Newest Jetex engine is the "150" with a thrust of 1.75 oz., selling for $4.95. Provides greatest ratio of thrust to weight yet developed. Has running time of 18 sec., empty weight of .75 oz., loaded weight of 1 oz. The "150's" overall length is 3.5 in., maximum diameter in just 1 inch.

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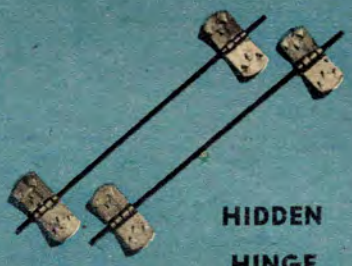

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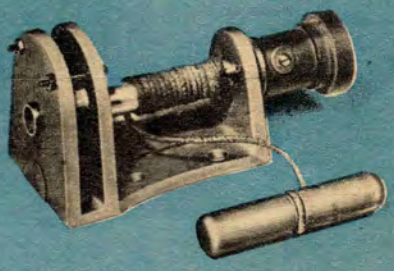

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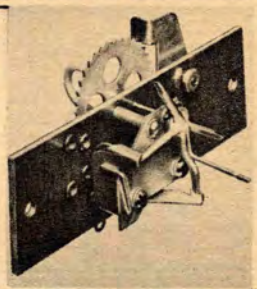

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R/C

(*Continued from page* 70)

Good is as follows: If receiver needs too much antenna to raise plate current, reduce the tuning inductance (take a turn or so off) and increase the tuning capacity. Reverse this procedure if receiver seems to want no antenna, or acts insensitive. He finds most Hytron tubes will not work so well with the receiver.

Lyle Snyder, Alameda, Calif., wishes to operate four escapements on one receiver. The best way to do this is by the use of A. F. tone control. Each tone would be made to work an escapement, and you could have as many as there are tone channels in the receiver and transmitter.

Commercial Items. Berkeley Models is out with new R/C plane kit, the "Brigadier RC-38." Looks just like the larger Brig, but will fly with engines down to .035. Also usable for Half-A PAA-Load. Watch for a review of this ship in Air Trails Blue Ribbon series.

Big doings at Control Research. They will have available an improved version of their popular two-tube receiver featuring plug-in installation and the first on the market with a printed circuit. XFG-1 tube used in first position, and XFG-1, RK-61 or 1V5 in second. Designed by Ed Lorenz, this receiver, and Ed's transmitter to follow soon, will be produced and sold by North American Model Products, Hilton Village, Va. Distribution will be through hobby shops throughout the country. This equipment is for 27.255 mc., of course, and other items are scheduled including a low-cost Beep-Box.

At least one crystal maker will have a stock of rocks on hand by the time you read this. James Knights Co., Sandwich, Ill., will be able to make immediate shipment of their units in three styles, two with plug-in pins to fit standard crystal sockets, and another with pigtail leads. This latter sounds like the best bet, as you just solder it in, like a resistor.

Radio Control Headquarters, Belmar, N. J., has announced 27.255 mc. kits for both transmitters and receivers. No details available yet, but watch the ads.

For the midget plane boys, there are coming smaller and smaller batteries. Latest are tiny B bats of 15, 22½ and 30 volts, made by Eveready, and numbered 504E, 505E, and 406E. They are about the same length as the Eveready 412E series but half the cross section. Shorter life, naturally.

Guess this closes us up for the month, but watch for big things in A.T. R/C coverage. For example—practical dope on conversion of 50 mc. rigs to 27, a well tested Half-A radio ship by one of the top midget plane boys, etc., etc.

—HOWARD G. MCENTEE

PHOTO CREDIT LIST

Page 16—Northrop Aircraft Corp.
Page 24—SA.4: Keystone; F-86E: Edgar Deigan.
Page 25—F-84G: Edgar Deigan.
Page 58—USAF, St. Petersburg, Fla., Times.

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MODELPLANE CONTEST CALENDAR

Meet directors are invited to list forthcoming competitions in this column. Advise Air Trails 90 days in advance to do the most good for your meet. If any area restrictions on entries, be sure to state. Address of contact man is same city as site of meet unless otherwise specified. Where info on events is furnished these are abbreviated as follows: indoor rubber powered—IR; outdoor rubber powered (unlimited)—ORU; outdoor hand launched gliders—OHLG; indoor gliders—IG; towline gliders—TL; free flight gas—FF; control line speed—SP; control line scale—CLSC; control line stunt—ST; team racing—TR; combat—COM; radio control—RC; rise-off-water free flight—ROW; carrier models—CAR; free flight scale—FFSC; non-flying exhibition scale—NFSC; jet speed—J; control line endurance—CLEND; Wakefield models—WAK.

July 6 (changed Date)—Topeka, Kans., Jr. C. of C. and Forbes AFB Class AAA meet. Ralph Persson, 1200 College.

July 6-13—Pittsburgh, Pa., Plymouth-Sun-Telegraph. M. J. Thomas, 246 Morrison Dr.

July 9-15—Amarillo AFB, Tex., Air Force World-Wide Championships. Lt. H. G. Vogler, Jr.

July 12-13—Bismarck, N. D., Plymouth Meet. A. J. May, RFD 2.

July 12-13—Cleveland, Ohio, Plymouth Meet. Harry McCall, 9609 Lorain Ave.

July 13—Grand Rapids, Mich., Plymouth Meet. Frank Stanford, 4501 Magnolia, S. W.

July 13—Paducah, Ky., Plymouth Meet. N. C. Harton, Jr., 134 Augusta Ave., Lone Oak.

July 13—Warsaw, Ind., Plymouth Meet. R. L. Evans, Bx 264, S. Whitley. RC-ST-SP-CLSC.

July 13—Fall River, Mass., Plymouth Meet. D. P. Turner, 246 Oliver. SP-ST-CLSC-COM.

July 13—Gouverneur, N. Y., Lions Meet. E. L. Grow, 35 Barney.

July 13—Wilmington, N. C., E. Carolina U/C Championships. W. M. Peck, Jr., 214 Walnut. SP-ST-CLSC.

July 13—Winston-Salem, N. C., Plymouth Dealers-Skywriters FF meet. Ed Aldridge, 853 Watson Ave.

July 13—St. Paul, Minn., Plymouth Dealers-Hobby Retailers meet. Harold Queen, Rm. 201, 1568 University Ave.

July 13—Montreal, Que., Sleepless Knights' meet. Cliff Morris, 2166 Demaricourt St. ORU-OHLG-TL-FF-SP-ST-CLSC.

July 13—Johnsville, Pa. (tentative). Phila. Plymouth dealers' qualifications and regional meet. Matt Sullivan, 214 W. Dauphin, Phila. 33

July 13—Lubbock, Tex., Plymouth Meet. E. R. Howell, Jr., 909-13th St.

July 13—Charleston, W. Va., Plymouth Meet. D. F. Bodkins, 212½ Elm St.

July 13—McMinnville, Ore. Stardusters' Fifth Annual Class AA FF. Robert Kern, 1906 N. Portland Blvd., Portland, Ore.

July 20—Midland, Mich., Plymouth Meet. Truman DeVore, 4114 Elm Ct.

July 20—Falls Church, Va., CL meet, W. S. Hinman, Jr., 410 Great Falls St.

July 20—Williamsville, N. Y. FF and CL. Flying Bisons, 79 Cobb St., Tonawanda, N. Y.

July 20—Greenfield, Mass., Kiwanis Meet. B. H. Williams, 27 Southampton Rd., Westfield.

July 20—Allentown, Pa., Plymouth Dealers meet for Pa. flyers. Pending. W. P. Hartzell, 335 Juniper St., Quakertown, Pa.

July 26-27—Toledo, Ohio, Plymouth Meet. R. J. Davis, 2831-109th St.

July 27—Sioux City, Iowa, Plymouth Meet. Albert Boisvert, Jr., 459 John St.

July 27—Portageville, Mo., Rotary-Plymouth Meet. W. C. Kroeger, c/o Dorris Motor Co. SP-CLSC-ST-COM-J.

July 27—Hagerstown, Md., CL meet. Pending. John Young, Box 691.

July 27—Hanover, Mass., Rockland Kiwanis Meet. E. G. Dolby, 33 Exchange St., Rockland.

July 28-Aug. 3—Los Alamitos N.A.S., Cal., National Meet. John L. Bollinger, 6116 Olive Ave., Long Beach 5.

Aug. 3—Cleveland, Ohio, Lake Erie GMC Half-A free flight meet. J. W. Grega, 10422 Gay Ave.

Aug. 3—Minn. & St. Paul, Minn., A.T.C.H.R. PAA-Load meet. W. H. Billett, 2548 Nicollett Ave., Minneapolis, Minn.

Aug. 3—Waynesboro, Pa., Exchange-Plymouth U-control meet. J. A. Otter, Rt. 3. SP-ST-TR-COM-RC-J-Beauty-Women's Stunt.

Aug. 10—Hartford, Conn. State CL Championships. Richard Matava, 358 Prospect Ave.

Aug. 10—Hamburg, N. Y., Cloud Busters' meet. Mrs. Robert Burdick, 108 Maple Ave. FF-SP-ST-RC.

Aug. 10—DeKalb, Ill., Cloud Dusters' Flying Circus. Dutch Hess, 137½ E. Lincoln. ORU-FF.

Aug. 10—Lancaster, Pa., MAC meet Pending Paul Liller, 426 W. Chestnut

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(Continued from page 73)

info from Harold Cole, sec.-treas., 217 Du Pont Ave., Madison.

The advance release on the Egyptian Model Club's big July meet reached us too late but we do want to pass on word of the club. It's an Illinois group and includes modelers from Marion and Herrin. More dope from the secretary: C. D. May, 321 S. Park, Herrin.

Buying Females by Mail? We just gotta break in here with a note from Cpl. John W. Austin who's with the 63rd Sig. Opn. Bn. John writes that he received the following postcard from a prominent U.S. mail order model firm. Everyone got such a bang out of it he thought AT'ers would too. We agree with him that it's enough to scare any mail man into resigning:

Dear Sir: Apparently your letter did not arrive, but we are today shipping you the Squaw.

Back to Club Chatter. Last fall after several sub-normal contests in the Lakeview, Wash., vicinity due to conflicting dates, lack of informing modelers of the meets, and lack of material means for conducting contests on the part of some of the smaller clubs, a group of modelers from three clubs met at Fort Lewis and proposed the formation of a Northwest Organization for the co-ordination of modeling in the area.

Three months were spent in advertising and pre-organization in an effort to get as broad a representation as possible before final organization. Election of officers and ratification of the constitution in February, 1952, brought the Northwest Associated Modelers into existence, with Earl F. Witt, Lakeview, Washington, as chairman, and Rex Hays, P. O. Box 867, Olympia, Washington, as secretary.

The Association was set up for the assistance and promotion of model building and not as a ruling body. The special flying event rules or classifications formulated by the clubs of the association are for the use of those so desiring and are not compulsory. Area records are maintained for the use of

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all clubs wishing them. Due to the extreme distances between member clubs, (Canada through Oregon) there was little hope of more than a few centrally located clubs attending regular meetings, therefore major rules or operation procedures are set up to be handled by mail to prevent the Association from becoming a local affair.

To date only one known active club in the area has failed to join.

The organization, since February, has been instrumental in the setting up of two clubs and has given assistance to several others, including Plymouth Motors in the Washington State Meet.

From where we sit NAW looks like a real goin' concern. Our best wishes for continued success, Earl, and pass along our congratulations to all the gang.

Short Notes. One from E. Kozicki, 1136 Highland Ave., Chester, Pa., advises us of the Prop Busters' interest in stunt work. Want to improve, he says. Gonna have some good stuff in the coming issue on that, Mr. K—at least that's what the ed sez. Once in awhile he crosses us up after telling us he is going to run something, then switches the schedules.

I tell you all editors are alike—nice guys, but a little crazy. Can't depend on them. Guess they always have too much on their minds.

Pat Porter, Box 94, Paint Rock, Tex., is a stunt fan, wants to correspond with like-minded modelers. Hez 14, in the 9th grade. Also wants plans for U/C flying saucer.

Bet you could doodle up the one in this issue into a U-kie, Pat.

Would-be plan trader Kenneth A. McLean, 755 Spruce St., Winnipeg, Man., Canada, wants to swap scale plans for WWII fighters and bombers.

Quiet, mates, here's a Detroiter as wants to contact solid scale model bods in England and/or Europe. He's 16. Harvey Randall is his name and you can address him at 869 Glinnan, Detroit 9, Mich.

—DOPESTER

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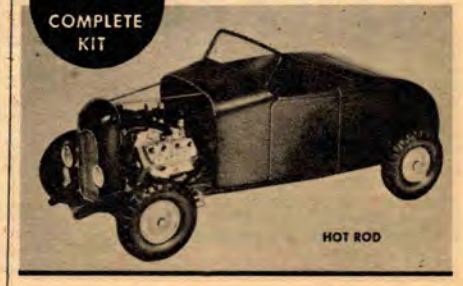

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This is the ultimate in scale model controliners. Power it with two gas engines up to .099, and a Jetex Jetmaster "150" as a "Stinger" in the tail for extra high speed boost, just like the real "Savage". Kit includes arresting hook for Carrier Event landings. Fly high speed on all three engines, fly low speed on one engine to win in high-low speed contests.

Scale jet air intake for Jetex cooling, thrust augmenter . . . No access hatches to mar finish. Jetex unit slips out scale size jet exhaust opening with ease . . . Full depth ply wing spar plus sheet planking amply support engine nacelles under landing impact.

FOR TWIN ENGINES PLUS JETEX . . . PERFECT SCALE!
Two .045 to .099 Engines, and Jetex 50, 100, 200, or new Jetmaster 150 unit. Adjustable balance!
(Jetex unit for reserve power & scale effect)

RADIO & PAA-Load Designs . . .

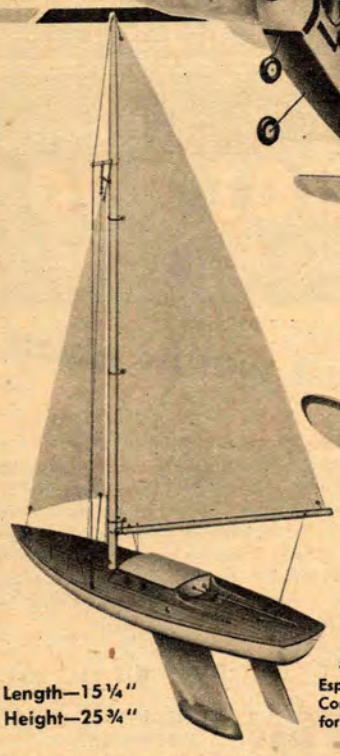
Pre-fabricated Kit—
$1.95

BRIGADIER "R. C.-38"

For .035 to .099 Engines—38" Wingspan

This completely re-designed "½ A—A" Free-Flight may be flown as a Radio Control job, a PAA-Load model, or a free-flight Sport Flyer. Plans include Radio Control and PAA-Load installation details. The kit is pre-fabricated with formed gear, die-cut balsa and plywood parts, hardware and notched trailing edges.

$4.95



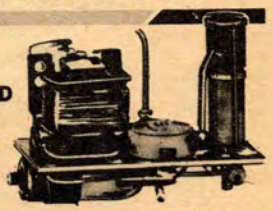
Length—15¼"
Height—25¾"

"SUPER BRIGADIER"

58" Wingspan—For .19 to .36 Engines

Especially designed by Henry Struck for Radio Control and PAA-Load flying. Plans show details for installation of equipment. Pre-fabricated.

27 m.c. CRYSTAL-CONTROLLED RADIO CONTROL



"SUPER AEROTROL"

NO OPERATORS LICENSE REQUIRED!

First Transmitter You Can *Build, Operate, Maintain* Yourself!

DUST-CORE TUNED Super Aerotrol RECEIVER

- Operates on either 27.2 or 52 mc. • NEW super-sensitive relay.
- NEW "locked-channel" dust-core tuning. (We have shipped the sample receivers across the country and to Europe without the frequency changing!
- Light in Weight, 2¾ oz. less batteries.
- Simple super-regenerator circuit, 100% dependable.

Kit includes: Finished, tested sensitive relay; finished dust-core tuner; drilled bakelite base with condensers and eyelets attached; all electrical components, condensers, resistors, coils, chokes and potentiometer; all necessary contacts, and color-coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included.

Kit— **$13.95**

Crystal-Controlled Super Aerotrol TRANSMITTER

- Completely portable—Self contained—No separate antenna—No external Batteries! • Operates on 27.255 mc. • Weighs 3.5 lbs.

Kit includes all necessary parts (except tube and batteries): Precision Ground Crystal; Painted Metal Cabinet; Finished Sectional Antenna; stamped and formed chassis with all holes punched; all necessary components, resistors, condensers, coils and chokes; color coded wiring. Can be assembled in less than two hours. Complete building and operating instructions are included—

Kit— **$21.95**

SAILABOUT "16"

The only Sailboat designed to sail-out and return. (U.S. Patent No. 2,561,831.)

$3.95

The Sailabout "16" is a scientifically designed sailboat that will give amazing speed. The rudder is timer-operated by a fuse mechanism that makes the boat "Come-about", and return over the same course.

- Carved & Hollowed Balsa Hull!
- Mahogany Cabin & Deck!
- Complete Ready-to-Use Sails!
- Metal Parts & Complete Hardware!
- Molded Metal Keel!

Still Available!

SOLD THRU BERKELEY DEALERS & DISTRIBUTORS

DE-Aerotrol (for 52 mc.) Complete Kit—**$22.95**
Includes Transmitter, Receiver, Escapement (less batteries and tubes).

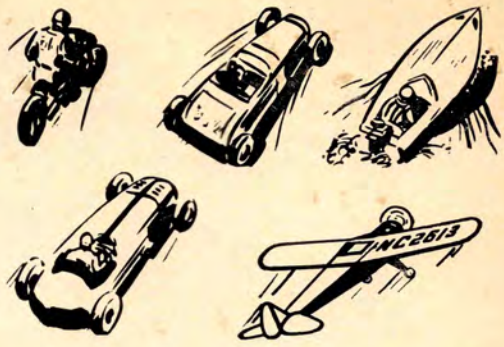
XFG-1	Receiver Tube	$3.50
3A5	Transmitter Tube	3.50
DE-105K	Escapement Kit	2.95

*Prices and specifications subject to change.

If no local dealer is convenient, mail orders will be filled by Berkeley Model Supplies, Dept. AT., West Hempstead, N. Y. Please include 25¢ packing & postage.

Berkeley's 1952 CATALOG . . . 25¢

• Would YOU Toss GUNK in YOUR FUEL?



If You Pay 70¢ to 85¢

per pint for model fuel, you should get and insist on the quality, purity and trouble-free control features found ONLY in Francisco fuels.

You'd Be Amazed

if you could see the impurities we remove from our RAW MATERIALS!

FRANCISCO FUEL!

THE **ONLY** **FUEL** with volatane control!

THE **ONLY** **FUEL** processed to avoid spoilage!

THE **ONLY** **FUEL** which is truly acclimatized!

THE **ONLY** **FUEL** based on 30 years' experience!

If you **do not** buy fuel with these impurities removed it's about like adding them yourself—just to see how soon you can wear out your engine! Or, how many races you can lose! Our processed fuels and oils show decrease in engine wear up to 80%. Raw fuel mixtures on the market show four times more impurities and deterioration rate than our lowest priced fuel. Glance at this LABORATORY REPORT and you'll see why FRANCISCO is the FUEL of CHAMPIONS.

LABORATORY REPORT

DETRIMENT IN EXHAUST per c UNIT TESTS:	FRANCISCO FUELS	PREPARED RAW FUELS No. 1	No. 2	No. 3
Carbon Dioxide . . .	1.9 lb.	2.8	3.1	3.3
Nitrogen	6.9 lb.	11.7	10.2	9.4
Water Condensed . .	1.21	1.5	1.75	2.15
Residue at 210° F Grams/100 ml: . . .	21.63	24.99	23.68	26.58
Sediment Centrifuge %:	trace	.3	.5	8.0

Most any fuel will run an engine—but "How will it perform?" How much carbon will it form? How soon will it deteriorate? Will it shorten the life of your engine? Our exclusive "gallon by gallon" processing is slow, tedious and exacting. We do it for the protection of you and your engine—and our reputation. Insist on processed FRANCISCO fuels for Purity, Volatane Control (Combustion efficiency) and Compression Rated Combustion control. IT COSTS NO MORE!

FUEL OF THE CHAMPIONS

From the World's Best Equipped Racing Fuel Laboratories

There is a specially processed FRANCISCO FUEL for every engine size, type and operation requirement. Ask your dealer for the one designed for your engine. **Also Treated Degummed Castor Oil Concentrates.**

THE MOST RESPECTED FUEL IN THE WORLD

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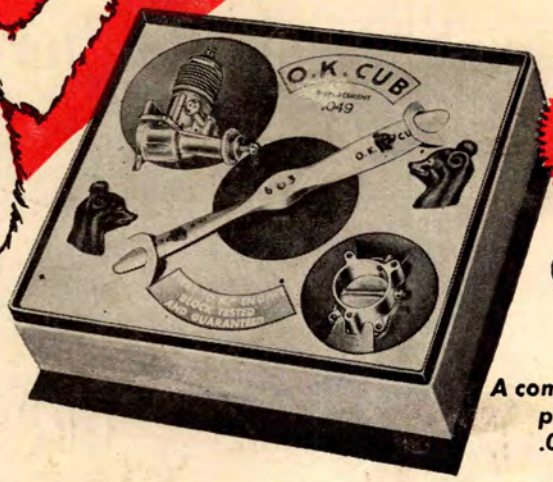
SAY OK for...

TOPS in VALUE and TOPS in PERFORMANCE



OK CUB .049 COMBINATION PACKAGE

A complete power plant with the .049 Cub only $5.75

Buy an OK Cub Combination Package in any of four displacements and enjoy tops in power, performance and value. Here is the complete power plant for your plane at a price. Each package contains assembled engine, propeller, and fuel tank.

Cub .039	$4.95
Cub .049	5.75
Cub .074	6.75
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Get Faster Starts, Better Power-Fuel Ratio. Maximum Engine Protection with

OK GLOW FUEL

Compounded especially for OK engines and engines of comparable compression ratios, OK Glow Fuel has a high methanol base heavily fortified with nitrates. Doesn't corrode, gum or varnish. Ideal for breaking in glow-plug engines. Has proved its championship qualities over a wide range of climatic conditions.

FULL PINT 85c

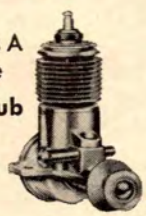
Easy to Start, Hard to Burn Out

OK GLOW PLUGS

Their superior platinum glow element assures quicker starting, faster acceleration, higher speeds. Outlasts ordinary plug. In two sizes, ¼-32 long and ¼-32 short for all OK and other engines 59c

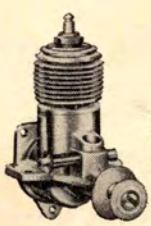
Greatest power output of any ½ A class engine

"OK" .049 Cub $5.25



Powerful Class A Performance

"OK" .099 Cub $6.95



Outstanding for stunt and speed flights

"OK" .074 Cub $5.95

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Assemble it yourself and save $1.20 on the price. More — you learn your engine from the inside out . . . know its precision fits . . . see what makes it run.

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